

Los Angeles County
Comprehensive Floodplain Management Plan

APPENDIX A.
ACRONYMS AND DEFINITIONS

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ACRONYMS AND DEFINITIONS

ACRONYMS

ADA—Americans with Disabilities Act

BLS—(U.S.) Bureau of Labor Statistics

CEO OEM—(Los Angeles County) Chief Executive Office Office of Emergency Management

CCR—California Code of Regulations

CEQ—Council on Environmental Quality

CEQA— California Environmental Quality Act

CFR—Code of Federal Regulations

CRS—Community Rating System

DMA—Disaster Mitigation Act

DFIRM—Digital Flood Insurance Rate Map

DPW—(Los Angeles County) Department of Public Works

DWR—(California) Department of Water Resources

EDD—(California) Employment Development Department

EMA—(California) Emergency Management Agency

EPA—(California) Environmental Protection Agency

ERP— Emergency Response Plan

ESA—Endangered Species Act

FEMA—Federal Emergency Management Agency

FIRM—Flood Insurance Rate Map

GIS—Geographic Information System

Hazus-MH—Hazards, United States-Multi Hazard

HUC—Hydrologic unit code

IPCC—Intergovernmental Panel on Climate Change

IRWM—Integrated Regional Water Management

LACDA— Los Angeles County Drainage Area (Study)

LACEDC—Los Angeles County Economic Development Corporation

LCP—Local Coastal Program

LiMWA—Limit of moderate wave action

MS4—Municipal separate storm sewer system

MT CO₂e—Metric tons of carbon dioxide equivalent

NFIP—National Flood Insurance Program

NIMS—National Incident Management System

NOAA—National Oceanic and Atmospheric Administration

NRCS—Natural Resources Conservation Service

NWS—National Weather Service

PPI—Program for Public Information

SEA—Significant Ecological Area

SFHA—Special Flood Hazard Area

USGCRP—U.S. Global Change Research Program

WRCC—Western Regional Climate Center

DEFINITIONS

100-Year Flood: The term “100-year flood” can be misleading. The 100-year flood does not necessarily occur once every 100 years. Rather, it is the flood that has a 1 percent chance of being equaled or exceeded in any given year. Thus, the 100-year flood could occur more than once in a relatively short period of time. The Federal Emergency Management Agency defines it as the 1 percent annual chance flood, which is now the standard definition used by most federal and state agencies and by the National Flood Insurance Program.

Access and functional needs: Additional needs before, during, and after an incident in functional areas, including but not limited to maintaining independence, communication, transportation, supervision, and medical care. Individuals in need of additional response assistance may include those who have disabilities; who live in institutionalized settings; who are elderly; who are children; who are from diverse cultures; who have limited English proficiency or are non-English speaking; or who are transportation disadvantaged.

Base Flood: The flood having a 1% chance of being equaled or exceeded in any given year, also known as the “100-year” or “1% chance” flood. The base flood is a statistical concept used to ensure that all properties subject to the National Flood Insurance Program are protected to the same degree against flooding.

Basin: A basin is the area within which all surface water—whether from rainfall, snowmelt, springs, or other sources—flows to a single water body or watercourse. The boundary of a river basin is defined by natural topography, such as hills, mountains, and ridges. Basins are also referred to as “watersheds” and “drainage basins.”

Benefit: A benefit is a net project outcome and is usually defined in monetary terms. Benefits may include direct and indirect effects. For the purposes of benefit-cost analysis of proposed mitigation initiatives, benefits are limited to specific, measurable, risk reduction factors, including reduction in expected property losses (buildings, contents, and functions) and protection of human life.

Benefit/Cost Analysis: A benefit/cost analysis is a systematic, quantitative method of comparing projected benefits to projected costs of a project or policy. It is used as a measure of cost effectiveness.

Capability Assessment: A capability assessment provides a description and analysis of a community’s current capacity to address threats associated with flooding. The assessment includes two components: an inventory of an agency’s mission, programs, and policies, and an analysis of its capacity to carry them out. A capability assessment is an integral part of the planning process in which a community’s actions to reduce losses are identified, reviewed, and analyzed, and the framework for implementation is identified. The following capabilities were reviewed under this assessment:

- Legal and regulatory capability
- Administrative and technical capability
- Fiscal capability

Community Rating System (CRS): The CRS is a voluntary program under the NFIP that rewards participating communities (provides incentives) for exceeding the minimum requirements of the NFIP and completing activities that reduce flood hazard risk by providing flood insurance premium discounts.

Critical Facility: A structure or other improvement that, because of its function, size, service area, or uniqueness, has the potential to cause serious bodily harm, extensive property damage, or disruption of vital socioeconomic activities if it is destroyed or damaged or if its functionality is impaired. For the purposes of this floodplain management plan, the following types of systems and assets are defined as critical facilities:

- Facilities critical to government response activities (i.e., life safety and property and environmental protection), which may include local government dispatch centers, schools, shelters, and hospitals.
- Facilities that, if damaged, could cause serious secondary impacts, such as hazardous material facilities.
- Facilities that are critical to utility operations, such as wastewater treatment plants and transformers.

Economically Disadvantaged Populations: Households with household incomes of \$20,000 or less.

Exposure: Exposure is defined as the number and dollar value of assets considered to be at risk during the occurrence of a hazard event.

Federal Disaster Declaration: Declarations typically made for events that cause more damage than state and local governments and resources can handle without federal government assistance. No specific dollar loss threshold has been established for such declarations. A federal disaster declaration puts into motion long-term federal recovery programs, some of which are matched by state programs, designed to help disaster victims, businesses, and public entities.

Flash Flood: A flash flood is a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a defined flood level.

Flood Insurance Rate Map (FIRM): FIRMs are the official maps on which the Federal Emergency Management Agency has delineated the Special Flood Hazard Area.

Flood Insurance Study: A report published by the Federal Insurance and Mitigation Administration for a community in conjunction with the community's Flood Insurance Rate Map. The study contains such background data as the base flood discharges and water surface elevations that were used to prepare the FIRM. In most cases, a community FIRM with detailed mapping will have a corresponding flood insurance study.

Floodplain: Any land area susceptible to being inundated by flood waters from any source. A flood insurance rate map identifies most, but not necessarily all, of a community's floodplain as the Special Flood Hazard Area.

Floodway: Floodways are areas within a floodplain that are reserved for the purpose of conveying flood discharge without increasing the base flood elevation more than 1 foot. Generally speaking, no development is allowed in floodways, as any structures located there would block the flow of floodwaters.

Freeboard: The height to which a water-containing structure, such as a dam or levee, is built above the expected highest water elevation.

Frequency: How often a hazard of specific magnitude, duration, and/or extent is expected to occur on average. Statistically, a hazard with a 100-year frequency is expected to occur about once every 100 years on average and has a 1 percent chance of occurring any given year.

Goal: A goal is a general guideline that explains what is to be achieved. Goals are usually broad-based, long-term, policy-type statements and represent global visions. Goals help define the benefits that a plan is trying to achieve. The success of a floodplain management plan is measured by the degree to which its goals have been met (that is, by the actual benefits in terms of actual hazard mitigation).

Geographic Information System (GIS): GIS is a computer software application that relates data regarding physical and other features on the earth to a database for mapping and analysis.

Hazard: A hazard is a source of potential danger or adverse condition that could harm people and/or cause property damage.

Hazard Mitigation Grant Program: Authorized under Section 202 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act and administered by FEMA, the Hazard Mitigation Grant Program provides grants to states, tribes, and local governments to implement hazard mitigation initiatives after a major disaster declaration. The purpose of the program is to reduce the loss of life and property due to disasters and to enable mitigation activities to be implemented as a community recovers from a disaster

Hazards U.S. Multi-Hazard (Hazardus-MH) Loss Estimation Program: Hazardus-MH is a GIS-based program used to support the development of risk assessments as required under the DMA. The Hazardus-MH software program assesses risk in a quantitative manner to estimate damage and losses associated with natural hazards. Hazardus-MH is FEMA's nationally applicable, standardized methodology and software program and contains modules for estimating potential losses from earthquakes, floods, and wind hazards. Hazardus-MH has also been used to assess vulnerability (exposure) for other hazards.

Hydraulics: Hydraulics is the branch of science or engineering that addresses fluids (especially water) in motion in rivers or canals, works and machinery for conducting or raising water, the use of water as a prime mover, and other fluid-related areas.

Hydrology: Hydrology is the analysis of waters of the earth. For example, a flood discharge estimate is developed by conducting a hydrologic study.

Local Government: Any county, municipality, city, town, township, public authority, school district, special district, intrastate district, council of governments (regardless of whether the council of governments is incorporated as a nonprofit corporation under State law), regional or interstate government entity, or agency or instrumentality of a local government; any Indian tribe or authorized tribal organization, or Alaska Native village or organization; and any rural community, unincorporated town or village, or other public entity.

Mitigation: A preventive action that can be taken in advance of an event that will reduce or eliminate the risk to life or property.

Mitigation Initiatives: Mitigation initiatives are specific actions to achieve goals and objectives that minimize the effects from a disaster and reduce the loss of life and property.

Objective: For the purposes of this plan, an objective is defined as a short-term aim that, when combined with other objectives, forms a strategy or course of action to meet a goal. Unlike goals, objectives are specific and measurable.

Preparedness: Preparedness refers to actions that strengthen the capability of government, citizens, and communities to respond to disasters.

Probability of Occurrence: The probability of occurrence is a statistical measure or estimate of the likelihood that a hazard will occur. This probability is generally based on past hazard events in the area and a forecast of events that could occur in the future. A probability factor based on yearly values of occurrence is used to estimate probability of occurrence.

Program for Public Involvement (PPI): A program developed for maintaining public involvement in implementation of the floodplain management plan and all other floodplain management activities to be carried out by the County of Los Angeles. The PPI is separate from the public involvement strategy that was used to develop the floodplain management plan.

Public Involvement Strategy: A set of tools and practices used to ensure that all interested stakeholders had opportunities to learn about the development of this floodplain management plan and provide input for its development. The public involvement strategy is separate from the PPI that will be used to implement the floodplain management plan.

Repetitive Loss Property: Any NFIP-insured property that, since 1978 and regardless of any changes of ownership during that period, has experienced:

- Four or more paid flood losses in excess of \$1000.00; or
- Two paid flood losses in excess of \$1000.00 within any 10-year period since 1978 or
- Three or more paid losses that equal or exceed the current value of the insured property.

Riverine: Of or produced by a river or stream. Riverine floodplains have readily identifiable channels. Floodway maps can only be prepared for riverine floodplains.

Risk: Risk is the estimated impact that a hazard would have on people, services, facilities, and structures in a community. Risk measures the likelihood of a hazard occurring and resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate, or low likelihood of sustaining damage above a particular threshold due to occurrence of a specific type of hazard. Risk also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: Risk assessment is the process of measuring potential loss of life, personal injury, economic injury, and property damage resulting from hazards. This process assesses the vulnerability of people, buildings, and infrastructure to hazards and focuses on (1) hazard identification; (2) impacts of hazards on physical, social, and economic assets; (3) vulnerability identification; and (4) estimates of the cost of damage or costs that could be avoided through mitigation.

Significant Ecological Area: Designated land in Los Angeles County that contains irreplaceable biological resources

Special Flood Hazard Area: The base floodplain delineated on a Flood Insurance Rate Map. The SFHA is mapped as a Zone A in riverine situations and Zone V in coastal situations. The SFHA may or may not encompass all of a community's flood problems

Stakeholder: Business leaders, civic groups, academia, non-profit organizations, major employers, managers of critical facilities, farmers, developers, special purpose districts, and others whose actions could impact hazard mitigation.

Vulnerability: Vulnerability describes how exposed or susceptible an asset is to damage. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damage, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power. Flooding of an electric substation would affect not only the substation itself but businesses as well. Often, indirect effects can be much more widespread and damaging than direct effects.

Watershed: A watershed is an area that drains down-gradient from areas of higher land to areas of lower land to the lowest point, a common drainage basin.

Zoning Ordinance: The zoning ordinance designates allowable land use and intensities for a local jurisdiction. Zoning ordinances consist of two components: a zoning text and a zoning map.

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APPENDIX B.
CRS GUIDELINES FOR FLOOD PLANNING



OMB No. 1660-0022
Expires: December 31, 2016

National Flood Insurance Program
Community Rating System

Coordinator's Manual (Excerpt)

FIA-15/2013



FEMA

510 FLOODPLAIN MANAGEMENT PLANNING—Summary

Maximum credit: 622 points

512 Elements

- a. **Floodplain management planning (FMP):** 382 points for a community-wide floodplain management plan that follows a 10-step planning process:
 - Step 1. Organize
 - Step 2. Involve the public
 - Step 3. Coordinate
 - Step 4. Assess the hazard
 - Step 5. Assess the problem
 - Step 6. Set goals
 - Step 7. Review possible activities
 - Step 8. Draft an action plan
 - Step 9. Adopt the plan
 - Step 10. Implement, evaluate, revise.
- b. **Repetitive loss area analysis (RLAA):** 140 points for a detailed mitigation plan for a repetitive loss area.
- c. **Natural floodplain functions plan (NFP):** 100 points for adopting plans that protect one or more natural functions within the community's floodplain.

Credit Criteria

Each element has a separate section discussing credit criteria.

Impact Adjustment

The impact adjustments for FMP and RLAA are described in separate sections. There is no impact adjustment for NFP.

Documentation Provided by the Community

Each element has a separate section describing needed documentation.

510 FLOODPLAIN MANAGEMENT PLANNING

The OBJECTIVE of this activity is to credit the production of an overall strategy of programs, projects, and measures that will reduce the adverse impact of the hazard on the community and help meet other community needs.

511 Background

Too often flood protection decisions are made quickly, with inadequate or outdated information or without considering all possible mitigation alternatives or the consequences of those alternatives. As a result, the community's resources are not allocated most appropriately, flood problems may not be fully addressed, and natural floodplain functions may suffer.

To remedy this situation, a careful, systematic process of planning is recommended, and may be credited by this activity. The Community Rating System (CRS) does not specify what activities a plan must recommend; rather, it recognizes plans that have been prepared according to the standard planning process explained in this activity.

Benefits: A well-prepared plan will

- Identify existing and future flood-related hazards and their causes;
- Ensure that a comprehensive review of all possible activities and mitigation measures is conducted so that the most appropriate solutions will be implemented to address the hazard;
- Ensure that the recommended activities meet the goals and objectives of the community, are in coordination with land use and comprehensive planning, do not create conflicts with other activities, and are coordinated so that the costs of implementing individual activities are reduced;
- Ensure that the criteria used in community land use and development programs account for the hazards faced by existing and new development;
- Educate residents and property owners about the hazards, loss reduction measures, and the natural and beneficial functions of floodplains;
- Build public and political support for activities and projects that prevent new problems, reduce losses, and protect the natural and beneficial functions of floodplains; and
- Build a constituency that wants to see the plan's recommendations implemented.

Types of plans: This activity credits three kinds of plans:

- Floodplain management planning (FMP): The most credit is for the first element, a community-wide floodplain management plan, but the element can also credit multi-hazard mitigation plans, multi-jurisdictional floodplain management and hazard mitigation plans, and floodplain management plans prepared for the U.S. Army Corps of Engineers.

- Repetitive loss area analyses (RLAA): The second element credits more detailed, site-specific plans to reduce flood losses in repetitively flooded areas. It has a narrower scope than a floodplain management plan, and receives fewer credit points.
- Natural floodplain functions plan (NFP): The third element provides credit for plans that address natural floodplain functions in the community.

A Category C repetitive loss community (defined in Section 502) must prepare either a FPM or RLAA area analysis that covers at least all of its repetitive loss areas.

Implementation: Credit is not provided for simply preparing a plan. Continued credit is dependent upon plan implementation. To maintain the credit for Activity 510, every year the community must evaluate its progress toward implementing the projects and programs in the plan, area analysis, or natural floodplain functions plan, and submit a report of that evaluation with its annual CRS recertification. It must update the background information and the recommendations in its floodplain management plans and repetitive loss area analyses at least every five years and in its natural floodplain functions plan(s) every 10 years.

Other plans: A plan by another name, such as a post-flood or multi-hazard mitigation plan, could receive credit under this activity if it was prepared in accordance with the process explained here. Hazard mitigation plans prepared to qualify for FEMA’s hazard mitigation grants that are accepted by FEMA will receive some credit under this activity.

By their very nature as overall guidance for a community’s program, plans should be coordinated with other plans and programs as well as the activities of other agencies or offices that have authority over the same area. It is recommended that communities also contact state and regional offices and agencies to review their plans and planning criteria. For example, state planning agencies have requirements for some kinds of plans and state emergency management agencies may have additional elements they would like to see included in a mitigation plan.

NOTE: An ordinance is NOT a plan. *An ordinance sets standards for land development and other activities. Planning may include a review of land development standards and procedures, but it should also cover a much broader range of activities, as noted in Figure 510-4.*

Class 9 Prerequisite: A Category C repetitive loss community (see Section 502) must receive credit under either Section 512.a, FMP or Section 512.b, RLAA with a plan that covers its repetitive loss areas.

A separate CRS publication, *CRS Credit for Floodplain Management Planning*, has a detailed discussion of the requirements of this section and of multi-hazard mitigation plans, as well as model plans and CRS credit documentation.

Communities are encouraged to read this and additional FEMA guidance on mitigation planning before beginning their floodplain management planning. These documents can be found at www.CRSresources.org/500.

512 Elements

512.a. Floodplain management planning (FMP)

The maximum credit for this element is 382 points.

FMP credit is provided for a community-wide floodplain management plan that was prepared by following a standard planning process. To receive any credit under this activity, the planning process must receive some credit under each of the 10 steps listed below. If the plan was approved by FEMA as a multi-hazard mitigation plan and one step is missing, the mitigation plan may receive credit, but FMP credit will be limited to 50 points. If two steps are missing, there is no credit for a multi-hazard mitigation plan.

For some steps, such as Step 1, the community may show that it implemented at least one of the listed credit items. For other steps, specific items are required as a minimum. Required items are noted with “(REQUIRED)” after them.

FEMA’s multi-hazard mitigation planning regulations pursuant to the Disaster Mitigation Act of 2000 are explained at www.fema.gov/plan/mitplanning. The 10-step CRS planning process is consistent with those regulations, which identify four phases of hazard mitigation planning. The 10 CRS steps are aligned with the four phases of mitigation planning requirements in Table 510-1.

The CRS-credited planning process must follow the 10 steps. Although the plan document must discuss and document all 10 steps, the written plan does not need to be organized by these 10 steps. To document CRS credit, the community must identify where these steps were covered in its plan, using the CRS planning credit activity checklist (see Figure 510-1).

Documentation or discussion of all but Steps 3 and 9 must be presented in the plan document. Steps 3 and 9 may be in the plan document or they may be explained in a separate memo from the community or the plan’s author as explained in the documentation section at the end of each step. The community must update the plan at least every five years and document the update by October 1, five years after the plan was adopted.

Note: It is recommended that the planner review all state and FEMA planning program guidelines, including the CRS planning credit checklist for Activity 510. Doing so will ensure that the planning effort will meet all state, FEMA, and CRS criteria. It is the community’s option, but with proper planning, one plan document can fulfill the planning criteria of several FEMA and state programs.

Table 510-1. Planning steps for mitigation and for the CRS.		
Multi-hazard Mitigation Planning	CRS	Maximum
Phase I – Planning process		
§201.6(c)(1)	1. Organize	15
§201.6(b)(1)	2. Involve the public	120
§201.6(b)(2) & (3)	3. Coordinate	35
Phase II – Risk assessment		
§201.6(c)(2)(i)	4. Assess the hazard	35
§201.6(c)(2)(ii) & (iii)	5. Assess the problem	52
Phase III – Mitigation strategy		
§201.6(c)(3)(i)	6. Set goals	2
§201.6(c)(3)(ii)	7. Review possible activities	35
§201.6(c)(3)(iii)	8. Draft an action plan	60
Phase IV – Plan maintenance		
§201.6(c)(5)	9. Adopt the plan	2
§201.6(c)(4)	10. Implement, evaluate, revise	26
Total		382

512.a Floodplain management planning (FMP):	
<input checked="" type="checkbox"/>	(1) Attached is the floodplain management or hazard mitigation plan to be credited.
<input checked="" type="checkbox"/>	Check here if the plan was also approved by FEMA as a hazard mitigation plan
<input checked="" type="checkbox"/>	(2) This CRS planning credit worksheet, completed.
CRS Planning Step	Page/Section
Step 1. Organize to prepare the plan	
(a) Involvement of the office responsible for community planning	Ch. 6, p. 6-2
(b) Planning committee of department staff	Ch. 1, p. 1-3
(c) Process or committee formally created by the community's governing board	
(1) Mark the plan document to show how it was prepared and who was involved in the planning process. Show which people or offices implement which of the six mitigation categories.	
<input checked="" type="checkbox"/>	
(2) [For item 1.(c)] Attach a copy of the governing body's action or resolution.	

Figure 510-1. An excerpt from a floodplain management planning credit checklist.

Credit Points for FMP

FMP = the total of points credited for Step 1 through Step 10, up to the maximum of 382 points

There are no credit formulae for this activity. The credits for each step are simply added together.

Note that the points listed (Step 1 to Step 10) are maximum possible points. The ISO/CRS Technical Reviewer may determine that one or more items do not warrant full credit.

Step 1. Organize to prepare the plan

The credit for this step is based on how the community organizes to prepare its floodplain management plan.

Credit Points for FMP Step 1

Credit for Step 1 is the total of the following points. (Maximum credit: 15 points)

- (a) 4 points, if the office responsible for the community's land use and comprehensive planning is actively involved in the floodplain management planning process. The "office" may be the community's planning or community development department, a consulting firm, or a regional planning agency, provided that it performs regular land use or comprehensive planning duties for the community. This office is usually not the floodplain management or mitigation planner or consultant, because the intention of this credit is to incorporate the floodplain management or mitigation plan into the rest of the community's planning activities. "Actively involved" means that staff regularly attend meetings, assist in the coordination (Step 3), and either write or review draft sections of the plan.
- (b) 9 points, if the planning process is conducted through a committee composed of staff from those community departments that implement or have expertise in the activities that will be reviewed in Step 7. One point is provided for each office represented. Divisions of departments can be counted as separate offices. For smaller communities with fewer departments, full credit is provided if the committee has representation from all offices with expertise in all six categories of activities credited in Step 7.

A planning committee is strongly recommended. By involving those who can contribute and will be most affected when the recommendations are carried out, the community will get a more realistic product that will have a much better chance of being adopted and implemented. Community

Step 7 Categories

- Preventive measures (e.g., codes)
- Property protection (e.g., elevation)
- Natural resource protection
- Emergency services
- Structural flood control projects
- Public Information

Also see Figure 510-4.

departments that could be represented on the committee include, but are not limited to

- Building department/code enforcement,
- Engineering,
- Land use planning/zoning,
- Public works,
- Emergency management/public safety,
- Public information,
- Environmental protection/public health,
- Parks/recreation,
- A city manager or council member, and
- Housing/community development.

If the planning committee includes representatives from the public and other stakeholders (with no attachment to local government), additional credit is provided in Step 2. Note that there is extra credit in Step 10 if the committee continues to meet after the plan is adopted in order to evaluate progress and recommend changes.

No credit is provided for the creation of a planning committee if the committee only meets once or twice. It must meet a sufficient number of times to involve the members in the following key steps of the planning process (e.g., at least one meeting on each step):

- Step 4. Assess the hazard,
- Step 5. Assess the problem,
- Step 6. Set goals,
- Step 7. Review possible activities, and
- Step 8. Draft an action plan.

If the community wants credit for participating in a multi-jurisdictional floodplain management or hazard mitigation planning committee,

- The community must send at least two representatives to the planning committee;
- At least half of the community's representatives must attend all the meetings of the planning committee. In effect, there must be a quorum from each community. Remote attendance, e.g., via a webinar that allows for everyone to talk, is permissible; and
- CRS credit for the multi-jurisdictional planning committee will be based on the representation from offices that implement the activities in Step 7.

Examples

- a. A community has a planning committee with representatives from its planning, zoning, building, emergency management, code enforcement, and public works departments, as well as the city manager's public information person. There is no one at the community level that deals with natural floodplain functions. The community's committee would receive six points, one for each representative.
 - b. A county is preparing a multi-jurisdictional plan for the county and 10 participating cities. This planning committee has 30 members, including two from each city. Among the members are representatives of all six Step 7 categories, e.g., a city engineer, a city public works person, the county planner, and the county soil and water conservation district. The county's committee would receive the full nine points, provided there was a quorum from each community seeking credit.
- (c) 2 points, if the planning process and/or the committee are formally created or recognized by action of the community's governing body.

Two points are provided if the community's governing body (e.g., the city council) formally recognizes the planning process. The preferred method is a formal resolution that designates who is responsible for preparing the plan and specifies a completion deadline. If a committee credited under Step 1(b) or 2(a) is used, the resolution should identify the members and the chair (or how the chair is selected) and how staff support is provided.

If a community participates in a multi-jurisdictional committee, its governing body must act in order for the community to receive this credit. A city will not receive this credit for a county council resolution. Conversely, a city can receive this credit even if there is no county credit.

Step 2. Involve the public

The planning process must include an opportunity for the public to comment on the plan during its development and before its approval. Members of the public may be part of the planning committee created under Step 1 or they may be organized as a separate committee.

For this credit, the term “public” includes residents, businesses, property owners, and tenants in the floodplain and other known hazard areas as well as other stakeholders in the community, such as developers and contractors, civic groups, environmental organizations, academia, non-profit organizations, major employers, and staff from other governmental agencies, such as a levee district, housing authority, Natural Resources Conservation Service, or the National Weather Service.

Members of an advisory body to the community that does not have any regulatory authority, such as a stormwater advisory board, can be counted as representatives of the public. Community employees and members of a regulatory body, such as a zoning board of appeals that makes final decisions, are not considered “public” or stakeholders and are counted as representatives of the community departments credited under Step 1(b).

The most important partners to assist in the plan development are already within your community: local government officials, community planning and design professionals, business leaders, civic and volunteer groups, emergency services personnel, and interested residents.

... Ensuring that your team has an equitable and diverse representation will enhance your planning efforts and help build support for mitigation.

—*Planning for a Sustainable Future*, FEMA-364

As with staff, involving the public and stakeholders brings them fully into the planning process, provides input on the viability of options being considered, and helps them to become concerned about the outcome. The largest number of points is provided for Step 2(a) because a planning committee with public membership has the following advantages:

- The committee can be a forum to both educate the public and also provide a means for public input into the plan.
- The participants recognize that they are involved and will be more willing to commit themselves to the process.
- The participants can do some of the work, especially data gathering, thereby reducing the overall cost of preparing the plan.
- A committee can be an effective forum for discussing alternatives, debating goals and objectives, and matching the technical requirements of a program to local situations.
- The committee members will provide information on the plan and process to their respective constituencies.
- The participants gain a feeling of “ownership” of the plan and its recommendations, which helps build public support for it.
- Committee members form a constituency that will have a stake in ensuring that the plan is implemented.

Note that 50% of the maximum credit for this planning step is a prerequisite for Class 4 or better communities.

Credit Points for FMP Step 2

The credit for this step is the total of the following points based on how the community involves the public during the planning process. (Maximum credit: 120 points)

- (a) Up to 60 points, if the planning process is conducted through a planning committee that includes members of the public and meets the following criteria:
 - (1) If the committee includes community staff (e.g., the planning committee credited under Step 1(b)), then at least one-half of the members must be representatives of the public or stakeholders for full credit. The credit is prorated for lower levels of public or stakeholder representation. Note that receiving 50% of the maximum credit for this planning step is a prerequisite for Class 4 or better communities and item (a) is one-half of the credit for Step 2.
 - (2) It must meet a sufficient number of times to involve the members in the key steps of the planning process, i.e., it must meet the same meeting criteria specified in Step 1(b).
 - (3) All meetings must be open to the public and the meeting schedule must be publicly posted (e.g., on a website).
 - (4) If the community wants credit for participating in a multi-jurisdictional floodplain management or hazard mitigation planning committee, it must meet the criteria specified in Step 1(b).
 - (5) The formalities of organizing and naming the committee are not as important as the membership and the ability of all members to participate. For example, a community may augment an existing committee with an advisory body of stakeholders. Such an arrangement would be credited, provided the stakeholders were treated as full committee members during the meetings, i.e., they can speak up, vote, and receive all the materials that regular members do.

Note that this planning committee can be (and it is recommended that it be) the same committee that prepares a Program for Public Information for credit under Activity 330 (Outreach Projects). The floodplain management plan document can also be or include the Program for Public Information document and/or the flood insurance coverage improvement plan credited under Activity 370 (Flood Insurance Promotion).

There is extra credit in Step 10 if the committee continues to meet after the plan is adopted in order to evaluate progress and recommend changes, provided that the committee continues to meet the above criteria. Such annual evaluations by a committee are required for some of the credits under Activities 330 and 370.

- (b) 15 points, if one or more public information meetings is held in the affected area(s) within the first two months of the planning process to obtain public input on the natural hazards, problems, and possible solutions. The meetings must be held separately from the planning committee meetings credited in item (1).

The intent of the public meeting(s) is to go out to the people to gather input. At a minimum, it must be separate from regular meetings of the planning committee or the

community's governing body. It is recommended that at least one of these public meetings be held in the affected neighborhoods.

- (c) 15 points, for holding one or more public meetings to obtain input on the recommended plan. The meeting(s) must be at the end of the planning process, at least two weeks before submittal of the recommended plan to the community's governing body.

Simply discussing the plan at a regular public meeting of the governing body, just before it is voted on, is not sufficient public input for CRS credit. To receive credit for this item, there must be at least one public meeting at the end of the planning process, at which the plan and its findings and recommendations are explained and people can ask questions and submit their comments for review, consideration, and potential modification of the plan. The CRS does not require public hearings. State and local laws take precedence, however. The community's legal counsel should determine if a public hearing is required.

- (d) 5 points, for each additional public information activity implemented to explain the planning process and encourage input to the planner or planning committee, up to a maximum of 30 points. Examples include, but are not limited to

- A website that explains the planning process and posts the time and place for its meetings, meeting agendas, status reports, and the draft plan, when it is ready for review.
- Conducting a public webcast that explains the planning process and solicits input.
- Questionnaires asking the public for information on their natural hazards, problems, and possible solutions. A questionnaire or survey that is sent to everyone in the floodplain or everyone in the community will receive double credit (10 points).
- Outreach projects, such as those credited in Activity 330 (Outreach Projects), which explain the planning effort and seek comments. These could include brochures, mailers, booths at shopping malls, presentations at civic or neighborhood organizations, etc.

Step 3. Coordinate

Most communities' flood problems have been studied already. There are likely to be existing plans, studies, and reports on flooding that need to be reviewed. There also may be flood protection activities being considered or implemented by other agencies.

This planning step credits incorporating other plans and other agencies' efforts into the floodplain management plan. Other agencies and organizations must be contacted to determine if they have studies, plans, or information pertinent to the floodplain management plan; to determine if their programs or initiatives may affect the community's program; and to see if they could support the community's efforts.

Examples of “other agencies and organizations” include neighboring communities; local, regional, state, and federal agencies; and businesses, colleges, and other private and non-profit organizations affected by the hazards or involved in hazard mitigation or floodplain management.

This credit is for coordinating with other agencies and organizations, particularly those that are not represented on the planning committee credited under Step 1(b) or Step 2(a). No special additional coordination measures are needed for the agencies and organizations on the planning committee, but the planners may want to formally contact the directors and others for the record.

Note that community needs and goals typically are developed during comprehensive planning activities. These goals should be identified in this step, reviewed, and considered during the development of the floodplain management plan. They should be taken into account when the goals for the floodplain management plan are developed in Step 6.

Credit Points for FMP Step 3

The credit for this step is the total of the following points. To receive credit for this step, the coordination must include item (a). (Maximum credit: 35 points)

- (a) 5 points, if the planning includes a review of existing studies, reports, and technical information and of the community’s needs, goals, and plans for the area. (REQUIRED) Where the information from the existing studies and reports is used in the plan, the source(s) should be referenced.

This review needs to include a review of community needs and goals, past flood studies, disaster damage reports, natural areas plans, and other documents that will provide information for the planning process.

- (b) 30 points, for coordinating with agencies and organizations outside the community’s governmental structure. There is no credit for talking to other departments within the city or county government. For this credit, “coordinate” means to

- Contact the agency or organization and keep a record of the contact (a generic announcement or notice on a website is not sufficient);
- Ask for data or information related to the hazard;
- Ask if the agency or organization is doing anything that might affect flooding or properties in flood-prone areas; and
- Offer the agency or organization an opportunity to be involved in the planning effort, such as by attending a committee meeting or commenting on the draft plan.

One point is provided for each agency or organization that is contacted.

Two points are provided for meeting or having a telephone conversation with the agency or organization. Such a coordination meeting or conversation must be separate from attendance at a planning committee meeting.

Coordination with an agency can only be counted once. For example, if a letter to an agency results in a follow-up meeting or telephone conversation, the community receives two points.

Examples of such agencies and organizations include, but are not limited to

- Neighboring communities;
- Local and regional agencies involved in hazard mitigation activities;
- Stakeholder-type organizations that are not represented on the planning committee;
- Local drainage, levee, sanitary, and soil and water conservation districts;
- Regional and metropolitan planning agencies;
- State NFIP Coordinator;
- State water resources agency;
- State coastal zone management agency;
- State emergency management agency;
- FEMA Regional Office;
- National Weather Service;
- U.S. Army Corps of Engineers;
- Natural Resources Conservation Service;
- U.S. Bureau of Reclamation;
- U.S. Fish and Wildlife Service;
- National Oceanic and Atmospheric Administration;
- Native American tribes;
- American Red Cross;
- Local homebuilders association; and
- Local environmental groups.

If the community wants the plan to qualify as a multi-hazard mitigation plan, the plan must identify all stakeholders that are involved or given an opportunity to be involved in the planning process. At a minimum, stakeholders must include

- 1) Local and regional agencies involved in hazard mitigation activities,
- 2) Agencies that have the authority to regulate development, and
- 3) Neighboring communities.

An “opportunity to be involved in the planning process” means that the stakeholders are engaged or invited as participants and given the chance to provide input to affect the plan’s content.

—*Local Mitigation Plan Review Guide*, FEMA

Step 4. Assess the hazard

At this step in the planning process, the planner or committee reviews, analyzes, and summarizes data collected about the natural hazard(s) that the community faces. This step focuses on the sources, frequency, extent, and causes of flooding while Step 5 will address the impact of flooding on people, property, infrastructure, the local economy, and natural floodplain functions.

Under Step 3(a), the community gathers data about the flood hazard. This step involves reviewing, analyzing, and summarizing the data from existing flood studies, including the Flood Insurance Study, drainage problem studies, historical records, and the knowledge and experiences of the planning committee members.

For CRS credit, the community does not need to conduct studies to develop new flood data. However, if this process determines that new maps or data are needed, they should be described for credit under item (d).

The hazard assessment needs to describe the local flood hazard and not be a broad or generic discussion of flooding in general. It needs to discuss how often it floods, the locations of areas that flood, the depth of flooding, and the source or cause of the flooding. Because the most important readers are elected officials and flood-prone residents, the descriptions of the hazards should be in lay terms.

The CRS Community Self Assessment described in Section 240 can help with this step.

Credit Points for FMP Step 4

The credit for this step is the total of the following points based on what the community includes in its assessment of the hazard. (Maximum credit: 35 points)

- To receive CRS credit for this step, the plan must include a flood hazard assessment credited under item (1).
 - If the community is a Category B or C repetitive loss community (see Sections 502–503), this step must cover all of its repetitive loss areas.
- (a) 15 points, for including an assessment of the flood hazard in the plan. (REQUIRED) Flood hazard areas that require assessment include
- The Special Flood Hazard Area (SFHA) shown on the Flood Insurance Rate Map (FIRM),
 - Repetitive loss areas,
 - Areas not mapped on the FIRM that have flooded in the past, and
 - Other surface flooding identified in other studies.
- (1) 5 points, for a map of the flood hazard areas. Area maps are acceptable for multi-jurisdictional plans.
- (2) 5 points, for a description of the known flood hazards, including source of water, depth of flooding, velocities, and warning time.
- (3) 5 points, for a discussion of past floods.
- (b) 10 points, for including an assessment of less-frequent flood hazards in the plan. For this credit, the community must
- (1) Identify the hazard, including
- a. Preparing an inventory of levees that would result in a flood of developed areas if they failed or were overtopped during a flood, and/or
 - b. Preparing an inventory of dams that would result in a flood of developed areas if they failed, and/or

- c. Identifying any of the flood-related special hazards listed in Section 401 of the *CRS Coordinator's Manual* that are found in the community, and/or
 - d. Identifying the coastal A Zone, i.e., the area where wave heights during the 100-year flood are between 1.5 and 3 feet;
- (2) Map the area(s) affected. (For planning purposes, an approximate affected area is sufficient. No new engineering studies are needed. Area maps are acceptable for multi-jurisdictional plans.) If an engineering study is conducted, it may receive credit under Activity 410; and
- (3) Summarize the hazard(s) in lay terms.

Note that, under Activities 620 (Levees) and 630 (Dams), items (b)(1)a and (b)(1)b are prerequisites for reaching Class 4 or better. Additional guidance on inventorying and mapping the areas affected by levee and dam failures can be found in Section 621.b and Section 631.b, respectively. It is recommended that communities incorporate these inventories into their floodplain management plans.

Item (a) is prorated if part of the “flood hazard” is missing, where applicable. For example, if the community is downstream of a dam, has a levee, and has a coastal A Zone, and the assessment includes only the dam failure hazard, the credit will be less than the full 10 points. If the community does not have a levee, it is reflected in the proration.

Two points are provided if the inventory is conducted and concludes that there are no levees, dams, or special flood-related hazards that threaten the community.

- (c) 5 points, if the assessment identifies areas likely to be flooded and flood problems that are likely to get worse in the future as a result of (1) changes in floodplain development and demographics, (2) development in the watershed, and (3) climate change or sea level rise. The credit is prorated if the assessment does not include all three types of changes.
- (d) 5 points, if the plan includes a description of the magnitude or severity, history, and probability of future events for other natural hazards, such as earthquakes, wildfires, or tornados. The plan should include all natural hazards that affect the community. At a minimum, it should include hazards identified by the state's hazard mitigation plan.

NOTE: *To qualify as a multi-hazard mitigation plan, the plan must address ALL of the community's flood and other natural hazards identified in the hazard assessment. Not only does an all-hazards plan help qualify for mitigation funds, but also it will better prepare the community for hazards other than flooding. It is common for communities to focus only on mitigation of flood problems because they occur more often. However, assessing the other hazards when preparing a flood plan can help address what can be done for all hazards, some of which may occur less frequently, but have a greater impact on the community.*

Step 5. Assess the problem

Flooding can be a natural and beneficial occurrence. A floodplain is only a problem area if human development (the built environment) gets in the way of, or exacerbates, the natural flooding process.

The previous step assessed the hazards facing the community. In this step, the community planners or planning committee members collect and summarize data on what is at risk. This step looks at the impact of those hazards on the community.

Note that 50% of the maximum credit for this planning step is a prerequisite for Class 4 or better communities.

Credit Points for FMP Step 5

The credit for this step is the total of the following points, based on what is included in the assessment of the vulnerability of the community to the hazards identified in the previous, hazard assessment, step. (Maximum credit: 52 points)

- To receive credit for this step, the assessment must include item (a).
 - Each credited item must cover all relevant flood-related hazards identified in Step 4.
 - Each credited item must include a description and summary of the problem(s). Simply listing data, such as the names of the critical facilities or the number of flood insurance claims, does not suffice for credit—there must be description of the impact of flooding and what kinds of problems arise, not just raw data.
 - For a multi-jurisdictional plan, each item needs to be described for each community. Tables are acceptable to show the data by community, but there still needs to be a narrative description and summary of the problem(s).
- (a) 2 points, if the plan includes an overall summary of the jurisdiction's vulnerability to each hazard identified in the hazard assessment (Step 4) and the impact on the community. (REQUIRED)
- (b) 25 points, if the plan includes a description of the impact that the hazards identified in the hazard assessment (Step 4) have on the features listed below:
- (1) 5 points, for life safety and the need for warning and evacuating residents and visitors.
 - (2) 5 points, for public health, including health hazards to individuals from flood waters and mold.
 - (3) 5 points, for critical facilities and infrastructure.
 - (4) 5 points, for the community's economy and major employers.
 - (5) 5 points, for the number and types of affected buildings (e.g., residential, commercial, industrial, with or without basements, etc.). For this credit, the assessment must include an inventory of all buildings owned by the community that are located in flood-prone areas and that identifies which buildings are insured for flood damage.

- (c) 5 points, if the assessment includes a review of historical damage to buildings, including all properties that have received flood insurance claims payments (in addition to the repetitive loss properties) and/or an estimate of the potential damage and dollar losses to vulnerable structures, including damage from mold and other flood-related hazards.

Communities must include repetitive loss areas in their problem assessment. (REQUIRED of Category B and C repetitive loss communities (see Sections 502–503))

In order to receive the full credit under item (c), the community reviews ALL the addresses of properties that have received flood insurance claims, not just the repetitive loss properties. Such a list is sent annually to all Category B and C repetitive loss CRS communities. Communities can request more recent lists through their FEMA Regional Office.

Data on building damage usually can be obtained from post-disaster damage assessment reports, flood insurance claims or disaster assistance data, and flood control studies. Particularly in areas that have experienced little or no serious flooding in recent history, a Hazus-MH flood analysis can yield valuable information about the potential for flood damage and loss (Figure 510-2). For best results, the building/structure inventory data bases in Hazus-MH should be augmented with local input.

The Privacy Act

Flood insurance data about private property, including repetitive loss properties, are protected under the Privacy Act. Personally identifiable Information such as the names or addresses of specific properties, whether they are covered by flood insurance or not, whether they have received flood insurance claims, or the amounts of such claims may not be released outside of local government agencies or to the public or used for solicitation or other purposes. Such information should be marked "For internal use only. Protected by the Privacy Act of 1974."

General or aggregated information, such as total claims paid for a community or an area or data not connected to a particular property may be made public.



Hazus-MH is a software program that contains models for estimating potential losses from earthquakes, floods, and hurricane winds. It can be a great help in the Step 5 vulnerability assessment.

Hazus-MH uses geographic information system (GIS) software to map and display hazard data and the results of damage and economic loss estimates for buildings and infrastructure. It also allows users to estimate the impacts of hurricane winds, floods, and earthquakes on populations.

Copies of Hazus-MH are available at no charge from the FEMA Distribution Center. Users can request that a 60-day trial/evaluation copy of ESRI's ArcGIS software be sent with Hazus-MH. Users should be familiar with GIS software. Hazus training is available at FEMA's Emergency Management Institute and elsewhere. Information is at <http://www.fema.gov/hazus/>.

Figure 510-2. About Hazus-MH.

- (d) 5 points, if the assessment describes areas within the floodplain that provide natural functions, such as wetlands, riparian areas, sensitive areas, and habitat for rare or endangered species.

Along with flood protection, comprehensive floodplain management planning should review the unique natural features, natural areas, and other environmental and aesthetic attributes that may be present in the floodplain. Protecting and preserving these natural and beneficial floodplain functions yield flood protection benefits and also help integrate floodplain management efforts with other community goals and objectives. This section should also review existing natural floodplain functions plans, such as those credited under Section 511.c.

- (e) 7 points, if the assessment includes a description of development, redevelopment, and population trends and a discussion of what the future brings for development and redevelopment in the community, the watershed, and natural resource areas.
- (f) 8 points, if the assessment includes a description of the impact of the future flooding conditions described in Step 4(c) on people, property, and natural floodplain functions.

Step 6. Set goals

The goals should set the context for the subsequent review of floodplain management activities and drafting of the action plan (Figure 510-3). They should incorporate or be consistent with other community goals for the affected areas. A multi-hazard mitigation plan should have goals that address all the major hazards that face the community.

Credit Points for FMP Step 6

The points for this step are provided if the plan includes a statement of the goals of the community's floodplain management or hazard mitigation program. The goals must address all flood-related problems identified in Step 5. (Maximum credit: 2 points)

Step 7. Review possible activities

At this step, the plan reviews different activities that could prevent or reduce the severity of the problems described in Step 5. This is a systematic review of a wide range of activities to ensure that all possible measures are explored, not just the traditional approaches of flood control, acquisition, and regulation of land use. The review, including the pros and cons of each activity, must be included in the plan document. Figure 510-4 lists some of the types of activities that could be reviewed under each of the six credited categories.

***NOTE:** This review is separate from Step 8, the selection of projects and activities to pursue. It includes activities that may not be selected and explains why some activities may be appropriate for the community and its flooding conditions and why some may not be appropriate.*

The range of activities should be evaluated for each area affected. While some of them may be quickly eliminated as inappropriate, most deserve careful consideration, especially to ensure full understanding of their costs and benefits.

St. Tammany Parish, Louisiana, Multi-Hazard Mitigation Plan

1. Protect the lives and health of the Parish's residents from the dangers of natural hazards.
 2. Ensure that public services and critical facilities operate during and after a disaster.
 3. Ensure that adequate evacuation routes, streets, utilities and public and emergency communications are maintained and available during and after a disaster.
 4. Protect homes and businesses from damage.
 5. Use new infrastructure and development planning to reduce the impact of natural hazards.
 6. Give special attention to repetitively flooded areas.
-

Gurnee, Illinois, Flood Mitigation Plan

1. Protect existing properties
 - a. Use the most effective approaches to protect buildings from flooding, including acquisition or relocation where warranted.
 - b. Enact and enforce regulatory measures that ensure that new development will not increase flood threats to existing properties.
 - c. Use appropriate measures to mitigate against the danger and damage posed by other natural hazards.
 2. Protect health and safety
 - a. Advise everyone of the safety and health precautions to take against flooding and other natural hazards.
 - b. Improve traffic circulation, during floods and at other times.
 - c. Improve water quality and habitat.
 - d. Do something about the mosquitoes.
 3. Improve the quality of life in Gurnee.
 - a. Preserve and improve the downtown core of businesses and services.
 - b. Ensure that current owners can maintain and improve their properties.
 - c. Use acquisition programs to expand open space and recreational opportunities.
 - d. Maintain an attractive riverfront and other public open spaces.
 4. Ensure that public funds are used in the most efficient manner.
 - a. Prioritize mitigation projects, starting with those sites facing the greatest threat to life, health, and property.
 - b. Utilize public funding to protect public services and critical facilities.
 - c. Utilize public funding for those projects on private property where the benefits exceed the costs.
 - d. Maximize the use of outside sources of funding.
 - e. Maximize owner participation in mitigation efforts to protect their own properties.
 - f. Encourage property-owner self-protection measures.
-
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Figure 510-3. Two examples of communities' statements of their goals.

1. **Preventive** activities keep flood problems from getting worse. The use and development of flood-prone areas is limited through planning, land acquisition, or regulation. They are usually administered by building, zoning, planning, and/or code enforcement offices.
 - Floodplain mapping and data
 - Open space preservation
 - Floodplain regulations
 - Erosion setbacks
 - Planning and zoning
 - Stormwater management
 - Drainage system maintenance
 - Building codes
2. **Property protection** activities are usually undertaken by property owners on a building-by-building or parcel basis.
 - Relocation
 - Acquisition
 - Building elevation
 - Retrofitting
 - Sewer backup protection
 - Insurance
3. **Natural resource protection** activities preserve or restore natural areas or the natural functions of floodplain and watershed areas. They are implemented by a variety of agencies, primarily parks, recreation, or conservation agencies or organizations.
 - Wetlands protection
 - Erosion and sediment control
 - Natural area preservation
 - Natural area restoration
 - Water quality improvement
 - Coastal barrier protection
 - Environmental corridors
 - Natural functions protection
4. **Emergency services** measures are taken during an emergency to minimize its impact. These measures are usually the responsibility of city or county emergency management staff and the owners or operators of major or critical facilities.
 - Hazard threat recognition
 - Hazard warning
 - Hazard response operations
 - Critical facilities protection
 - Health and safety maintenance
 - Post-disaster mitigation actions
5. **Structural projects** keep flood waters away from an area with a levee, reservoir, or other flood control measure. They are usually designed by engineers and managed or maintained by public works staff.
 - Reservoirs
 - Levees/floodwalls
 - Diversions
 - Channel modifications
 - Storm drain improvements
6. **Public information** activities advise property owners, potential property owners, and visitors about the hazards, ways to protect people and property from the hazards, and the natural and beneficial functions of local floodplains. They are usually implemented by a public information office.
 - Map information
 - Outreach projects
 - Real estate disclosure
 - Library
 - Technical assistance
 - Environmental education

Figure 510-4. Categories of floodplain management activities.

Credit Points for FMP Step 7

The credit for this step is the total of the following points based on which floodplain management or hazard mitigation activities are reviewed in the plan. (Maximum credit: 35 points)

This step must describe those activities that were considered. There is no credit for simply listing the various types of projects under each credited category. For each activity, there must be a discussion of why the activity is or is not appropriate for the community and its flood problems.

For an activity that is determined to be appropriate,

- The discussion must also include community's capability to fund and implement the activity.
- If an activity is currently being implemented, the plan must note if it is achieving expectations and, if not, whether it should be modified.
- If the plan is an update of a previously credited plan, each activity recommended by the previous plan must be discussed, along with the status of implementation.

The discussion of each activity needs to be detailed enough to be useful to the lay reader.

Section (a) is required for any credit under this step.

(a) 5 points, if the plan reviews preventive activities, such as zoning, stormwater management regulations, building codes, subdivision ordinances, and preservation of open space, and the effectiveness of current regulatory and preventive standards and programs. (REQUIRED) For this credit, the review must include a discussion of the community's

- Comprehensive or land use plan,
- Building code,
- Zoning ordinance,
- Floodplain management regulations,
- Subdivision ordinance, and
- Stormwater management regulations.

The discussion must review

- How these tools can reduce future flood losses,
- The current standards in the community's plans and regulations, and
- Whether the community should adopt or revise such plans and regulations in light of the Step 5 problem assessment and the goals set in Step 6.

- (b) 5 points, if the plan reviews whether the community's floodplain management regulatory standards are sufficient for current and future conditions, as discussed under Steps 4(c) and 5(f).
- (c) 5 points, if the plan reviews property protection activities, such as acquisition, retrofitting, and flood insurance;
- (d) 5 points, if the plan reviews activities to protect the natural and beneficial functions of the floodplain, such as wetlands protection;
- (e) 5 points, if the plan reviews emergency services activities, such as warning and sandbagging;
- (f) 5 points, if the plan reviews structural projects, such as levees, reservoirs, and channel modifications; and
- (g) 5 points, if the plan reviews public information activities, such as outreach projects and environmental education programs.

Step 8. Draft an action plan

After the review of alternatives during Step 7, an action plan is drafted (Step 8) that selects and specifies those activities appropriate to the community's resources, hazards, and vulnerable properties. The community should strive for a balanced program, selecting measures from more than one category of floodplain management activity. In every case, the community should implement preventive activities both to keep its flood problems from getting worse and also to protect new construction from the effects of natural hazards.

There is no requirement that a floodplain management plan identify expensive or massive structural flood control projects. The plan must include activities that the community can be assured will be implemented through its own resources. If outside funding support is needed for some projects, the funding sources should be identified and researched to ensure that the projects are eligible and the community has a chance of receiving the funds. Many of the activities could receive CRS credit once they are implemented.

Note that 50% of the maximum credit for this planning step is a prerequisite for Class 4 or better communities.

Credit Points for FMP Step 8

The credit points are based on the range of actions that are recommended in the plan, subject to the criteria listed below. (Maximum credit: 60 points)

- For each recommendation, the action plan must identify
 - Who is responsible for implementing the action,
 - When it will be done, and
 - How it will be funded.

“When it will be done” can be specified in terms of a date, a set period of time after another action is complete, after the next flood, etc. “How it will be funded” could state that funding will be dependent on a grant, provided the project is eligible for the grant program.

- The actions must be prioritized. When prioritizing mitigation actions, the planners need to consider the benefits that would result from the mitigation actions and projects versus the cost of those actions. Note that this is not a requirement for a cost-benefit analysis for every action item. However, an economic evaluation is essential for selecting one or more actions from among many competing ones.
 - There must be an action item for each goal in Step 6. An example of this is in Figure 510-5.
 - Credit is provided for a recommendation on floodplain regulations, provided it recommends adopting or continuing a regulatory standard that exceeds the minimum requirements of the National Flood Insurance Program (NFIP). Simply continuing to meet the minimum criteria of the NFIP is not credited as an action item to improve the community’s floodplain management program.
 - If the plan calls for acquiring properties, there must be a discussion of how the project(s) will be managed and how the land will be used after it is acquired.
 - When a multi-jurisdictional plan is prepared, it must have action items from at least two of the six categories that directly benefit each community seeking CRS credit.
 - To qualify as a multi-hazard mitigation plan, the plan must include a “process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate” (44 *CFR* §201.6(c)(4)(ii)). The action items that relate to preventive activities should clarify how this is done. For example, an action item could recommend that the next time the zoning ordinance is revised, flood and landslide hazard areas be considered when determining allowable uses.
- (a) 45 points, depending on how many categories are covered by the action items:
- (1) 10 points, if the action plan includes flood-related recommendations for activities from two of the six categories credited in Step 7; OR
 - (2) 20 points, if the action plan includes flood-related recommendations for activities from three of the six categories credited in Step 7; OR
 - (3) 30 points, if the action plan includes flood-related recommendations for activities from four of the six categories credited in Step 7; OR
 - (4) 45 points, if the action plan includes flood-related recommendations for activities from five of the six categories credited in Step 7.

Table 9-1. Action Items, Goals, and Recommendations							
Action Item	Goal 1. Protect critical facilities and utilities	Goal 2. Protect lives and health	Goal 3. Protect homes, businesses, and schools	Goal 4. Minimize the costs to the City and property owners	Goal 5. Ensure that new construction supports these goals	Chapter – Recommendation	Deadline
9.2. Administrative Action Items							
1. Plan adoption	X	X	X	X	X		5/31/07
2. Monitoring and reporting	X	X	X	X	X		9/30 each year
3. Community Rating System	X	X	X	X	X	4-3, 6-5, 7-3, 8-1 - 8-8	CRS visit
9.3. Program Action Items							
4. Levee improvements	X	X	X	X		4-1	Ongoing
5. Drainage improvements	X	X	X	X		4-2	8/31/08
6. Drainage system maintenance	X	X	X			4-3	CRS visit
7. Property protection funding	X	X	X	X		5-2, 5-3	8/31/07
8. Regulatory review	X		X		X	6-5	CRS visit
9. NFIP administration	X	X	X		X	6-2	After CAC
10. CFMs	X	X	X		X	6-2, 6-3	8/31/07
11. BCEGS	X	X	X		X	6-4	5/31/07
12. Flood response plan	X	X	X			7-1 – 7-4	Ongoing
9.4. Public Information Action Items							
13. Annual mailing		X	X		X	8-1, 8-2, 8-7, 8-8	Each Spring
14. Technical references		X	X		X	8-4, 8-5	CRS visit
15. Public information projects		X	X		X	4-4, 5-1, 6-1, 6-6, 7-4, 8-1 – 8-8	Ongoing
16. Public information messages		X	X		X	4-4, 5-1, 6-1, 6-6, 7-4, 8-1 – 8-8	Ongoing
This table relates the 16 action items to the 5 goals of this Plan. The goals are stated in full on pages 3-6 and 9-1. The table also shows the relation between the action items and the recommendations at the end of chapters 4 – 8. For example action item 8, Regulatory Review, implements recommendation 6-5 at the end of chapter 6. The reviews need to be completed in time for the CRS verification visit, which will be in the second half of 2007.							

**Figure 510-5. An excerpt from the City of Gretna, Louisiana's
Flood Hazard Mitigation Plan.**

- (b) 10 additional points are provided if the action plan establishes or revises post-disaster redevelopment and mitigation policies and procedures. These policies and procedures should account for the expected damage from a base flood or other disaster. For example, the action plan should identify the areas likely to be worst hit and the policies should determine whether they will be rebuilt if substantially damaged. Post-disaster mitigation procedures should assign responsibilities for public information, code enforcement, planning, and other efforts that encourage, mandate, and/or fund loss reduction activities.

Note that Activity 330 (Outreach Projects) provides credit for public information materials developed for use during and after a flood (Flood Response Preparations (FRP)). Preparation of those materials should be done when the other post-disaster policies and procedures are prepared.

- (c) 5 additional points are provided if the plan includes action items (other than public information activities) to mitigate the effects of the other natural hazards identified in the hazard assessment (Step 4, item (b)).

Step 9. Adopt the plan

The points for this step are provided if the plan and later amendments are officially adopted by the community's governing body. The plan must be an official plan of the community, not an internal staff proposal. "Adopted" means that there is a resolution or other formal document that is voted on by the community's governing body. A note in the minutes or passage via a consent agenda is not credited.

When a multi-jurisdictional plan is prepared, it must be adopted by the governing body of each community seeking CRS or multi-hazard mitigation plan credit.

Step 10. Implement, evaluate, and revise

To be useful, planning must be ongoing and plans must be dynamic. The plan should not sit on a shelf gathering dust once it is completed. Therefore, the community must have an evaluation and update process.

For CRS credit, plans must be implemented. No plan is perfect. As implementation proceeds, flaws will be discovered and changes will be needed. Not only can hazard conditions change but also goals and objectives may change. If a community is hit by a tornado, for example, the short-term action items may be changed to focus attention on the newly damaged areas in the SFHA.

Changes should be made in the action plan when opportunities arise to add new activities or complete some items ahead of schedule. The plan should also be revised if it is found that some activities cannot be completed on the original timetable. At a minimum, these types of changes must be made at the required 5-year update.

The key to this step is the annual evaluation report on progress in implementing the plan. Not only are annual evaluations required with the community's annual recertification, but also the process of conducting an annual evaluation gives the community a framework for

monitoring the plan's effectiveness and the community's progress in implementing it. Failure to submit the evaluation report with the community's annual recertification will result in loss of the planning credit (i.e., FMP = 0). This can cause a Category C repetitive loss community to revert to a Class 10.

Credit Points for FMP Step 10

The credit for this step is the total of the following points, based on how the community monitors and evaluates its plan. (Maximum credit: 26 points)

- The plan document must describe how, when, and by whom the plan will be monitored, evaluated, and revised. It is recommended that these items be included in the adoption resolution as well.
 - An annual evaluation report on progress towards plan implementation must be prepared at least once each year and submitted with the community's annual CRS recertification. The report must be submitted to the governing body, released to the media, and made available to the public.
 - If a community receives credit as a result of participation in a multi-jurisdictional plan that includes action items for each community, the annual evaluation report must cover those action items. This can be done either by a multi-jurisdictional planning committee or through separate submittals by each community. However, a community will not receive credit if it did not participate in the meeting at which the annual report was prepared. Therefore, the submittal needs to show who participated in the preparation of the report.
 - The community must update the plan at least every five years. The update is due by October 1, five years after the plan was adopted (see next section).
 - Step 10(b) provides credit if the planning committee does the evaluation and revision. If the committee does not continue to meet and report or if the committee membership no longer meets the credit criteria in Step 2(a), the community will not keep the committee credits under Steps 1(b) or 2(a).
- (a) 2 points, if the community has procedures for monitoring implementation, reviewing progress, and recommending revisions to the plan in an annual evaluation report. The report must be submitted to the governing body, released to the media, and made available to the public. (REQUIRED)
- (b) 24 points, if the annual evaluation report is prepared by the same planning committee that prepared the plan that is credited in Step 2(a) or by a successor committee with a similar membership that was created to replace the planning committee and charged with monitoring and evaluating implementation of the plan. The points are based on how frequently the committee meets, since more frequent meetings yield more progress toward implementing the plan. The committee must continue to meet the representation, quorum, and other criteria that determined the credit points under Step 2(a).
- (1) 6 points, if the committee meets only once a year.
 - (2) 12 points, if the committee meets twice a year.
 - (3) 24 points, if the committee meets at least quarterly.

Five-year Update

The community must submit a copy of its plan update at least every five years. The plan update will be reviewed for CRS credit according to the *Coordinator's Manual* currently in effect, not the version used when the community originally requested this credit. The update must include the following steps:

- (a) Steps 1 and 2: If the original planning process included a committee, then in order to keep the credit provided under Step 1(b) or Step 2(a), the update must be conducted by a committee that meets the criteria identified in those steps.
- (b) Step 2: If the original planning process received credit for a public meeting credited under Step 2, item (c), then to keep this credit the community must also conduct a public meeting that reviews and receives comments on the draft update.
- (c) Step 3, item (a): The update must include a review of new studies, reports, and technical information and of the community's needs, goals, and plans for the area that have been published since the plan was prepared.
- (d) Steps 4 and 5: The hazard and problem assessments must be reviewed and brought up to date. The assessments must account for
 - New floodplain or hazard mapping,
 - Annexation of flood-prone areas,
 - Additional repetitive loss properties,
 - Completed mitigation projects,
 - Increased development in the floodplain or watershed,
 - New flood control projects,
 - Lack of maintenance of flood control projects,
 - Major floods or other disasters that occurred since the plan was adopted, and
 - Any other change in flooding conditions and/or development exposed to flooding or the other hazards covered in the plan.
- (e) Step 6: The original plan's goals must be reviewed to determine if they are still appropriate, given the revisions to Steps 4 and 5.
- (f) Step 8: The action plan must be revised to account for projects that have been completed, dropped, or changed and for changes in the hazard and problem assessments, as appropriate.
- (g) Step 9: The update must be adopted by the community's governing body.

An annual evaluation report that includes these steps may qualify as the five-year update (but may not qualify as an update for a multi-hazard mitigation plan).

Impact Adjustment for FMP

rFMP is a ratio that reflects how much of the community's flood hazard areas are covered by the floodplain management plan. Note that to qualify for a hazard mitigation plan, all of the community's flood hazards must be covered.

rFMP = EITHER

1.0, if the plan covers all of the community's known flood hazard areas. "Known flood hazard areas" means the SFHA shown on the FIRM, repetitive loss areas, areas not mapped on the FIRM that have been flooded in the past, and surface flooding identified in existing studies (see Step 4)

OR

0.25, if the planning covers either all of the community's repetitive loss areas or at least 25% of the community's known flood hazard areas.

Documentation for FMP Provided by the Community

(1) With the submittal of the plan or the five-year update to the plan,

- (a) A copy of the plan or updated plan to be credited. This can be a hard copy, digital copy, or link to a website with the full document. Either the plan is marked, or a separate document is provided, to show where each credited step and sub-step appears. There is a checklist that can be used to do this, available at www.CRSresources.org/500.
- (b) [For Step 1(b) credit for a committee of staff from different departments] The plan or a separate document must show which department representatives implement, or have expertise in, which of the six categories of mitigation measures.
- (c) [For Step 1(c) credit] A copy of the resolution or other official action taken by the governing body to create or recognize the planning process as specified in Step 1. For Step 2(a) credit for a planning committee, the resolution or action must identify the committee's membership.
- (d) [For Step 2(a) credit for a planning committee] The names of the committee members, their titles, and their represented organizations must be listed in the plan. The community may submit separate materials, such as meeting minutes and sign-in sheets, to document meeting attendance.
- (e) For Step 2(b), (c), or (d) credit for public meetings] Copies of the publicity for the public meetings. The notices of the meetings should be in the form of letters to floodplain residents, a notice sent to all residents, or a newspaper article or advertisement. An inconspicuous legal notice appearing in the classified section of the newspaper is not sufficient for CRS credit. If very few residents are affected, as may be the case for a plan that addresses only a repetitive loss area, a written record that the residents were called would be sufficient documentation.

- (f) [For Step 3(a) credit for reviewing existing studies, reports, and technical information] The plan must note where the information from the studies and reports was used, e.g., with quotations or footnotes. The plan also needs to include a list of all the documents reviewed. This is usually done in a reference section or at the end of each chapter.
- (g) [For Step 3(b) credit for coordination with other agencies and organizations] A record of the contacts and meetings. Acceptable records include letters that cover the items needed for coordination, copies of any responses that were received, follow-up memos from the meetings, notes from telephone conversations, and e-mails. These items are usually not included as a part of the plan document.
- (h) A copy of the resolution or other formal adoption action by the governing body as specified in Step 9. The resolution should identify the implementation responsibilities, describe the evaluation and revision procedures, and call for the five-year update (or adopt by reference such language that may be in the plan document).

(2) With each annual recertification,

- (a) A copy of the annual evaluation report as specified in Step 10. The report must review each action item, describe what was implemented (or not implemented), and recommend changes to the action plan as appropriate. If not in the evaluation report document, the recertification submittal must also include the minutes of the committee meeting(s) (if getting credit for Step 10(b)) and a description of how the report was submitted to the governing body, released to the media, and made available to the public.

***NOTE:** Failure to submit the floodplain management plan's evaluation report with the annual recertification or the five-year update will result in loss of the planning credit (i.e., FMP = 0). Loss of credit for this activity may cause a repetitive loss Category C community to revert to a Class 10.*

512.b. Repetitive loss area analysis (RLAA)

The maximum credit for this element is 140 points.

A repetitive loss area analysis is a detailed mitigation plan for a repetitive loss area. It provides more specific guidance on how to reduce damage from repetitive flooding than a community-wide floodplain management or hazard mitigation plan. Mapping repetitive loss areas is discussed in Section 503.

As with a floodplain management plan, CRS credit is dependent upon the community's following an appropriate process. The five steps for an area analysis are less involved than the 10-step floodplain management planning process, but the analysis must evaluate each building in the repetitive loss area(s).

A community may receive credit for both a floodplain management plan and repetitive loss area analyses. Area analyses may be conducted during floodplain management planning or a

floodplain management plan may identify areas needing analyses, which are conducted after the plan is adopted. For CRS credit, a separate analysis must be prepared for each repetitive loss area and made available to residents of those areas.

Additional guidance and suggestions for conducting an area analysis can be found in Chapter 7 of *Reducing Damage from Localized Flooding*, FEMA-511.

Credit Criteria for RLAA

- (1) Communities with one or more repetitive loss properties on FEMA's list must have at least one repetitive loss area delineated in accordance with the criteria in Section 503. The area(s) must include at least one of the properties on FEMA's repetitive loss list.

An exception to this criterion is made for communities that have no historic repetitive flood claims, but are nevertheless working to reduce repetitive flooding. These communities may prepare area analyses for areas that have been repetitively flooded. The analyses must describe and map the repetitive flooding problem (including all past flood insurance claims, if any) and meet all the following credit criteria. If there are multiple areas, they must not be contiguous. Communities using this approach may receive 20 credit points per area.

- (2) An area analyses must have been prepared and adopted for each repetitive loss area in the community. The analyses must meet the following criteria:
 - (a) The repetitive loss areas must be mapped as described in Section 503.b.
 - (b) If the community does not conduct an analysis of all the areas, it will be reflected through the impact adjustment. A Category C community must prepare analyses for all of its repetitive loss areas if it wants to use RLAA to meet its repetitive loss planning prerequisite (see Section 502).
 - (c) A five-step process must be followed. Although all five steps must be completed, steps 2–4 do not have to be done in the order listed. For example, the planners may want to contact agencies and organizations to see if they have useful data (Step 2) after the site visit is conducted (Step 3).

Step 1. Advise all the properties in the repetitive loss areas that the analysis will be conducted and request their input on the hazard and recommended actions. The notice (or any public document) cannot identify which properties are on FEMA's repetitive loss list (see the box on flood insurance data and the Privacy Act). There are no restrictions on publicizing what properties are in repetitive loss AREAS that have more than one property and there are no restrictions on publishing aggregate data, such as how many properties received claims or the average value of those claims. Community planning staff may share insurance claims information with the owner of the property, but may not make it available to anyone else.

- The notice can be sent to owners OR residents at the community's discretion, as long as a representative of each property is notified.

The Privacy Act

Flood insurance data about private property, including repetitive loss properties, are protected under the Privacy Act. Personally identifiable Information such as the names or addresses of specific properties, whether they are covered by flood insurance or not, whether they have received flood insurance claims, or the amounts of such claims may not be released outside of local government agencies or to the public or used for solicitation or other purposes. Such information should be marked "For internal use only. Protected by the Privacy Act of 1974."

General or aggregated information, such as total claims paid for a community or an area or data not connected to a particular property may be made public.

- The notice cannot be done via a newspaper or newsletter notice or article.
- The notice must advise the recipients when and how copies of the draft report can be obtained and ask for their comments on the draft.

Step 2. Contact agencies or organizations that may have plans or studies that could affect the cause or impacts of the flooding. The agencies or organizations must be identified in the analysis report.

Step 3. Visit each building in the repetitive loss area and collect basic data.

- The site visit must collect data sufficient to do a preliminary determination of the cause of the repetitive flooding and of the mitigation measures that would be appropriate. This usually includes a review of drainage patterns around the building, the condition of the structure, and the condition and type of foundation.
- The person conducting the visit should not have to enter the property—adequate information should be collected from observations from the street.
- Floor elevations or historical flood levels are not required, but can be very helpful where available.
- The date for each building's insurance claim can help identify the cause of flooding (e.g., rainfall or overbank flooding) and the amount of the claim can help determine the amount of damage. Note that, every year, each repetitive loss community is provided with a list of its historic insurance claims. This includes single-claim properties. Non-repetitive-loss communities that elect to do an RLAA may request these data from their ISO/CRS Specialist.
- More information on appropriate data can be found in *Selecting Appropriate Mitigation Measures for Floodprone Structures*, FEMA-551.
- This step may be done using the "limited data view" of the National Flood Mitigation Data Collection Tool (Figure 510-6).

The National Flood Mitigation Data Collection Tool has been developed by FEMA to gather information related to risk, building construction, and costs in order to help make decisions about what mitigation measures are appropriate for a flood-prone property. The tool is in Microsoft Access format and is free to any public agency. See www.fema.gov/plan/prevent/floodplain/data_tool.shtm.

The tool may be populated with insurance claim data for the properties. The local planners need to remember that such information is subject to the Privacy Act, which prohibits public release of the names of policy holders or recipients of financial assistance and the amount of the claim payment or assistance. However, maps showing areas where claims have been paid can be made public. The data can be used for internal planning and can be helpful in identifying problem areas.

The tool has two levels of data collection. Limited data usually can be collected through a windshield-type survey, while completing the entire detailed data section may require elevation surveying and structural inspections inside the buildings. The detailed data are collected when the limited effort concludes that mitigation is possible and the additional data are needed to determine the most appropriate mitigation measure and its benefits and costs.

Figure 510-6. The National Flood Mitigation Data Collection Tool.

Step 4. Review alternative approaches and determine whether any property protection measures or drainage improvements are feasible. The review must look at all of the property protection measures listed in Figures 360-1 and 510-4 that are appropriate for the types of buildings affected. A review that looks only at drainage or structural flood control project alternatives is not sufficient.

Step 5. Document the findings. A separate analysis must be conducted for each area. In general, separate reports are preferred for each area, but in cases in which several areas have similar building and flooding characteristics and similar mitigation measures are appropriate, the analyses can be assembled into a single report. Each report must include

- A summary of the process that was followed, including how the property owners were involved;
- The problem statement with a map of the area affected. The statement and map may show individual properties or parcels, but cannot show which ones are on FEMA's repetitive loss list;
- A list or table showing basic information for each building, such as address, foundation type, condition, and appropriate mitigation measures. This list cannot include insurance data, such as how many claims have been paid for that property. If the property owners responded to a survey, the survey responses may be included (unless the community promised confidentiality);
- The alternative approaches that were reviewed; and

- Action items that include

- Who is responsible for implementing the action,
- When it will be done, and
- How it will be funded.

“When it will be done” can be expressed in terms of a date, a set period of time after another action is complete, after the next flood, etc. “How it will be funded” could state that funding will be dependent upon receiving a grant, provided that one or more suitable grant programs are specified to which application(s) for funding will be made.

(3) The repetitive loss area analysis report(s) must be submitted to the community’s governing body and made available to the media and the public. If private or sensitive information (such as names or street addresses) is included in the report, then a summary report(s) must be prepared for the governing body, committees, media, and the public. The complete repetitive loss area analysis report(s) must be adopted by the community’s governing body or by an office that has been delegated approval authority by the community’s governing body.

(4) The community must prepare an annual evaluation report for its area analyses.

- The report must review each action item, describe what was implemented (or not implemented), and recommend changes to the action items as appropriate.
- One annual report can cover some or all of the area analyses that were prepared.
- The report must be made available to the media and the public (including the property owners and residents of the repetitive loss areas).
- The report is submitted with the community’s annual recertification.

(5) The community must update its repetitive loss area analyses in time for each CRS cycle verification visit.

- The update must review the flooding and building conditions as well as any changes to FEMA’s repetitive loss list, to determine whether the number of buildings on the list or other circumstances have changed, and revise the mapping and action items accordingly.
- The update can be a new report or an addendum to the existing report.
- An annual evaluation report that reviews and updates the 5-step process may qualify as the area analysis update.
- The update can qualify as the annual evaluation report for the year it was prepared.
- The update must be made available to the media and the public (including the property owners and residents of the repetitive loss areas).

If, during the area analysis or annual reviews, the community finds that the flood risk to one or more repetitive loss properties has been mitigated, FEMA must be notified by submitting an AW-501, as described in Section 501.

- If the repetitive flooding problem has been mitigated, the appropriate documentation must be submitted in order to remove the properties from FEMA's repetitive loss list (see Section 501).
- Any changes to an adopted area analysis must be approved following the same process as approval of the original analysis.

Credit Points for RLAA

$$\text{RLAA} = 140$$

The maximum credit for this element is 140 points. A community can obtain the maximum only if it prepares and adopts repetitive loss area analyses for all its repetitive loss areas. This is factored in through the impact adjustment.

Impact Adjustment for RLAA

rRLAA is the ratio of the number of buildings covered by credited area analyses to the total number of buildings in the community's repetitive loss areas. See Sections 301–303 on calculating an impact adjustment.

$$\text{rRLAA} = \frac{\text{bAA}}{\text{bRLA}}, \text{ where}$$

bAA = the number of buildings addressed in
credited area analyses, and

bRLA = the number of buildings in the community's
repetitive loss areas

Documentation for RLAA Provided by the Community

(1) At each verification visit,

- (a) A copy of each repetitive loss area analysis report or update of an earlier report that the community wants credited (see Step 5).
- (b) Documentation showing how the owners or residents of the areas were notified (see Step 1).
- (c) Documentation showing how the analysis was made available to the media and the public.
- (d) A copy of the resolution or other formal action by the governing body that adopts the area analysis or accepts changes in subsequent updates.

(2) With the annual recertification,

- (a) A copy of the annual evaluation report (Section 512.b, credit criterion (4)). If not in the evaluation report, the recertification submittal must also document how the evaluation report and update were made available to the media and the public.

NOTE: Failure to submit the area analysis' evaluation report with the annual recertification or the update at the next cycle verification visit will result in loss of the credit (i.e., RLAA = 0). Loss of credit for this activity may cause a repetitive loss Category C community to revert to a Class 10.

512.c. Natural floodplain functions plan (NFP)

The maximum credit for this element is 100 points.

NFP credit is provided for adopting plans that protect one or more natural functions within the community's floodplain. Examples include

- A habitat conservation plan that explains and recommends actions to protect rare, threatened, or endangered aquatic or riparian species.
- A habitat protection or restoration plan that identifies critical habitat within the floodplain, actions to protect remaining habitat, and/or actions to restore fully functioning habitat. Frequently this will result in the preservation and/or restoration of riparian habitat that is necessary for water-dependent species.
- A "green infrastructure plan" that identifies open space corridors or connected networks of wetlands, woodlands, wildlife habitats, wilderness, and other areas that support native species, maintain natural ecological processes, and/or sustain air and water resources (for credit, the corridors or networks must include some floodplains).
- A plan or section of a comprehensive or other community plan that includes an inventory of the ecological attributes of the watershed and/or the floodplain and recommends appropriate actions for protecting them, provided that the recommendations are implemented through a mechanism such as a development regulation, development order, grant program, or capital improvement plan.

NOTE: Element NFOS2, (section 2 of the natural floodplain functions open space credit under Activity 420 (Open Space Preservation)), provides bonus credit for open space parcels that are designated in a plan to protect natural functions. A plan that receives NFP credit qualifies parcels for this extra open space credit.

Credit Criteria for NFP

(1) For all plans:

- (a) The plan may cover more than one community, but it must have an impact on natural floodplain functions within the community seeking credit.
- (b) The plan must be adopted. If the plan is not a community plan adopted by the community's governing body, it must be adopted by the appropriate regional agency.
- (c) The plan must be updated at least once every 10 years. The update must include a review of any changes to conditions as well as progress made since the original plan

was prepared. Any changes to the adopted plan must be approved by the original adopting agency.

- (d) The plan must include action items for protecting one or more identified species of interest and natural floodplain functions. The action items must describe who is responsible for implementing the action, how it will be funded, and when it will be done. General policy statements with no means of implementation are not considered action items.
 - (e) There is no credit for a plan that addresses water quality issues prepared pursuant to a requirement for an NPDES (National Pollution Discharge Elimination System) permit. Plans to improve drainage, stormwater storage, or channel bank erosion may be credited under Activity 450 (Stormwater Management) or Activity 540 (Drainage System Maintenance).
- (2) For NFP1: A plan for NFP1 credit must include a comprehensive inventory of the natural floodplain habitat within the community. It must identify areas that warrant protection or preservation in order to maintain fully functioning habitat for the species of interest. Where threatened or endangered species are present, each species must be addressed and a restoration plan must be included.
- (3) For NFP2: This sub-element credits other plans that meet the credit criteria listed in (1). These could be single-issue or single-species plans or plans that cover only one area of the community's floodplain.

Credit Points for NFP

NFP = the total of the following

NFP1 = 80 points, for a plan, or combination of plans, that meets credit criteria (1) and (2) and covers the entire SFHA within a community

NFP2 = 15 points, for each plan that meets credit criterion (1)

Impact Adjustment for NFP

There is no impact adjustment for this element. The NFP1 plan must cover the entire community or all of the community's floodplains. Each NFP2 plan receives the appropriate credit regardless of the extent of the area covered.

Documentation for NFP Provided by the Community

- (1) At each verification visit,
- (a) A copy of each natural floodplain functions plan or update to a plan that the community wants credited.
 - (b) A copy of the resolution or other formal adoption action.

513 Credit Calculation

$$c510 = (FMP \times rFMP) + (RLAA \times rRLAA) + NFP, \text{ where}$$

FMP = the total of the credit points for the 10 steps in Section 512.a

514 For More Information

- a. Additional information, reference materials, and examples can be found at www.CRSresources.org/500.
- b. See Appendix C to order a free copy of *CRS Credit for Floodplain Management Planning*. It is also on the CRS website, at www.CRSresources.org/500.
- c. Hazus-MH is a risk assessment software program that is described in Figure 510-2. Copies are available free from FEMA. Users need to be familiar with operating GIS software. Training is also available. More information is available at www.fema.gov/hazus/.
- d. Contact state or regional planning, water resources, natural resources, environmental protection, state hazard mitigation, or NFIP coordinating agencies for information on state and federal agencies that can help prepare a floodplain management plan.
- e. The following publications discuss the floodplain management planning process and the variety of measures that should be examined. They can be found on the websites noted.

FEMA has a series of “how-to guides” on planning, to help communities meet the multi-hazard mitigation planning criteria. They can be found at www.fema.gov/hazard-mitigation-planning-resources#1.

Getting Started: Building Support for Mitigation Planning (FEMA-386-1) covers planning Phase I and CRS planning Steps 1–3.

Understanding Your Risks: Identifying Hazards and Estimating Losses (FEMA-386-2) covers planning Phase II and CRS planning Steps 4–5.

Developing the Mitigation Plan: Identifying Mitigation Actions and Implementation Strategies (FEMA-386-3) covers planning Phase III and CRS planning Steps 6–8.

Bringing the Plan to Life: Implementing the Hazard Mitigation Plan (FEMA-386-4) covers planning Phase IV and CRS planning Steps 9–10.

Integrating Manmade Hazards into Mitigation Planning, FEMA-386-7.

Reducing Damage from Localized Flooding: A Guide for Communities, FEMA-511 (2005). Also available at www.fema.gov/library/viewRecord.do?id=1448.

Planning for Post Disaster Recovery and Reconstruction, American Planning Association (APA) Planning Advisory Service, 346 pages, APA Report # 483/484, FEMA-421 (1998). www.fema.gov/library/viewRecord.do?id=1558.

Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability, 43 pages, FEMA-364, 2000. Also available for downloading at <http://www.fema.gov/media-library/assets/documents/2110?id=1541>.

Reducing Losses in High Risk Flood Hazard Areas—A Guidebook for Local Officials, FEMA-116, 1987. Also available for downloading at www.fema.gov/library/viewRecord.do?id=1508.

“Mitigation Benefit Cost (BCA) Toolkit Compact Disc.” This CD includes all the FEMA BCA software, technical manuals, BCA training course documentation, and other supporting material and BCA guidance. Copies can be obtained by calling FEMA’s toll-free BC Hotline at 1-866-222-3580.

- f. *Hazard Mitigation: Integrating Best Practices into Planning*, James C. Schwab (ed.) (2010) is published by the American Planning Association as Planning Advisory Service No. 560. Available for \$60 from www.planning.org/apastore/.
- g. The Corps of Engineers can also provide technical information and advice to communities interested in preparing a comprehensive floodplain management plan. Requests for assistance should be submitted to the Flood Plain Management Services Coordinator at the appropriate District Office of the Corps. Corps offices can be found at <http://www.usace.army.mil/Locations.aspx>.
- h. The following publications can help with a repetitive loss area analysis.

Selecting Appropriate Mitigation Measures for Floodprone Structures, FEMA-551.

Reducing Damage from Localized Flooding: A Guide for Communities, FEMA-511 (2005).

Flood Proofing: How to Evaluate Your Options, U.S. Army Corps of Engineers (1994). Download at <http://www.usace.army.mil/Missions/CivilWorks/ProjectPlanning/nfpc.aspx>. Click on “NFPC Publications” and scroll down to find the title.

515 Related Activities under the Community Rating System

- A floodplain management plan should be a blueprint for ALL of a community’s public information and floodplain management activities. Planning Step 7 should review all ongoing and possible activities and Step 8 should identify which should continue, which should change, and what new ones should be initiated.
- The CRS Community Self Assessment in Section 240 can help with the hazard and problem analyses in FMP Steps 4 and 5.
- Activities 330 (Outreach Projects) and 370 (Flood Insurance Promotion) provide credit for having a committee that meets criteria very similar to those of the committee in FMP Step 2. The same committee can fulfill all activities’ credit criteria.

- The credit for natural floodplain functions open space (NFOS) under Activity 420 (Open Space Preservation) can be increased if the open space parcels are identified in a natural floodplain functions plan (NFP).
- A repetitive loss area analysis (RLAA) can identify projects and priorities for mitigation activities that can receive bonus credit under Activities 520 (Acquisition and Relocation) and 530 (Flood Protection).
- A multi-hazard mitigation plan that meets FEMA planning criteria is a prerequisite for FEMA funding for projects that can be credited under Activities 520 (Acquisition and Relocation) and 530 (Flood Protection).

Los Angeles County
Comprehensive Floodplain Management Plan

APPENDIX C.
STEERING COMMITTEE GROUND RULES

APPENDIX C.

STEERING COMMITTEE GROUND RULES

PURPOSE OF THE STEERING COMMITTEE

The role of the Steering Committee (SC) is to guide the planning process for the *Los Angeles County Comprehensive Floodplain Management Plan*. The SC will provide guidance and leadership, oversee the planning process, and act as the point of contact for local governments and the various interest groups interested in this planning effort. Members of the SC were selected to represent a cross-section of views and interests within the planning area. Through this inclusion of diverse interests, the SC hopes to enhance the robustness of the planning effort and to build support for floodplain management activities across stakeholder groups. A successful planning effort will result in the adoption and approval of a floodplain management plan that sets the stage for reducing the adverse impacts of floods within the County through activities and strategies embraced by both elected officials and their constituents.

CHAIRPERSON AND VICE CHAIRPERSON

Hu Yi has been selected as the chairperson and **Debbie Sharpton** has been selected as the vice chairperson of the SC. The role of the chairperson is to:

- lead meetings so that agendas are followed and meetings adjourn on-time;
- allow all members to be heard during discussions;
- moderate discussions between members with differing points of view; and
- be a sounding board for staff in the preparation of agendas and how to best involve the full Committee in work plan tasks.

The role of the vice chairperson is to assume the duties of the chair when the chair is not able to attend a meeting or forum.

QUORUM

A quorum for the SC will be 7 members. When less than 7 members are present at a meeting, items listed on the agenda may still be reviewed and discussed; however, any committee action as to those items will be postponed until a quorum is present.

ALTERNATES

Committee members were selected for the SC based on their specific backgrounds and perspectives on matters related to floodplain management. Regular attendance by members is needed to understand the issues presented, identify and reflect on various stakeholder perspectives, and reach agreements on plan recommendations. However, there may be circumstances when regular members cannot attend. To address these circumstances, alternates may be designated for each SC member. An alternate attending on behalf of a SC member shall have the same rights and responsibilities as the SC member during that meeting. Alternates will be included on all SC emails and should stay informed of the business of the SC.

DECISION-MAKING

The SC will strive for consensus in its decision-making process. If consensus cannot be reached as to a particular item or issue, the SC's decision will be determined by a majority vote of the Committee members in attendance at the meeting, and the meeting minutes will reflect the number of votes in favor, opposed and in abstention.

RECOMMENDATIONS

The Committee's recommendations will be recorded in the meeting summaries and reflected in the floodplain management plan as appropriate. The Committee may also be asked to assist in public presentations of the Plan and its recommendations.

STAFFING

The Planning Team for this project includes appropriate personnel from the Los Angeles County Department of Public Works, Watershed Management Division along with contract consultant assistance provided by Tetra Tech, Inc. The Planning Team will schedule meetings, distribute agendas, prepare information/presentations for Committee meetings, write meeting summaries, and generally seek to facilitate the Committee's activities.

A County-designated public information officer, **Kerjon Lee** (626) 458-4348, will be the designated spokesperson for this planning effort.

MEETING DATES

Meetings generally will be conducted on the 4th Tuesday of each month from 10:30 AM to 12:30 PM at Los Angeles County Department of Public Works Headquarters in Alhambra. Meetings will be open to the public and advertised as such.

ATTENDANCE

Participation of all Committee members in meetings is important and members should make every effort to attend each meeting. If Committee members will not be able to attend a meeting, they should provide as much advance notice as reasonably possible to the Planning Team before the meeting is conducted. If neither a SC member nor his or her alternate attends three consecutive meetings, the SC chairperson will reach out to the member to determine if participation will still be possible. The Steering Committee will strive to maintain the SC membership at 13 members with a representative makeup similar to the initial committee makeup.

PUBLIC INVOLVEMENT

All Steering Committee meetings will be open to the public.

Members of the public wishing to address the SC at a meeting may do so based on the following protocol:

- Requests to be heard must be made to the Chairperson of the Steering Committee by submitting a completed speaker request form to the Chairperson before the meeting is called to order. Speaker request forms shall ask for the following information:
 - Agenda item number to be discussed or Public Comment
 - If the person is in favor/opposed to the agenda item (if applicable)
 - Person's name
 - Person's telephone number (optional)
 - Person's address (optional)
 - Name of organization (if applicable)
 - A brief summary of the person's position on the matter (optional).

- Each member of the public will be granted a total of 3 minutes to address their topics of concern. This allotted time cannot be aggregated or passed on to another individual.
- All comments must have relevance to the floodplain management plan and the planning area. Relevance will be determined by the Chairperson.

A member of the public may request clarification from the SC by raising his or her hand during the normal course of the meeting; however, permission to speak will be granted at the discretion of the chairperson.

The meeting agendas for all SC meetings will be posted on the Floodplain Management website and at Los Angeles County DPW Headquarters a minimum of 72 hours prior to all scheduled meetings.

COURTESY

Committee members should treat each other with respect, listen to each other, work cooperatively, and allow all members to voice their opinions.

STEERING COMMITTEE MEMBERSHIP

Agency	Steering Committee Member	Alternate
LACDPW - Watershed Management Division	George De La O	Eduardo Escobar
LACDPW - Disaster Services Group	Loni Eazell	Belinda Popoff
LACDPW - Water Resources Division	Martin Araiza	
LACDPW - Flood Maintenance Division	Hu Yi (Chairperson)	Araik Zargaryan
LACDPW - Building and Safety Division	Lisa Naslund	Jessica Bunker
Los Angeles County Fire Dept.	Scott Gardner	David Godoy
Los Angeles County Regional Planning	Mark Child	Connie Chung and Gina Natoli
Mountains Restoration Trust	Debbie Sharpton (Vice Chairperson)	Wyatt Rovera and Don Lenz
Malibou Lake Mountain Club	Michael Hart	
American Red Cross Los Angeles Region	Kendra Pospychalla	Tomoyo Kuriyama
Los Angeles Chamber of Commerce	Frank Lopez	John Larson
Local Business Owner, Crystallaire Country Club	John Blalock	
Altadena Town Council	Okorie Ezieme	

Los Angeles County
Comprehensive Floodplain Management Plan

APPENDIX D.
PUBLIC OUTREACH MATERIALS

APPENDIX D. PUBLIC OUTREACH MATERIALS

SUMMARY OF SURVEY RESULTS

About the Survey

The Los Angeles County Department of Public Works developed and disseminated a 33-question online survey to assist with the incorporation of public outreach in its 2015 Comprehensive Floodplain Management Plan. The survey was available through a link on the County website. In addition to multiple choice questions, Los Angeles County residents were offered the opportunity to provide additional information and detail through several open response sections, the majority of which were associated with a closed response question to ensure as much detail as possible. The survey, completed by 136 County residents, sought to determine public awareness and perception on several flood-related issues, including:

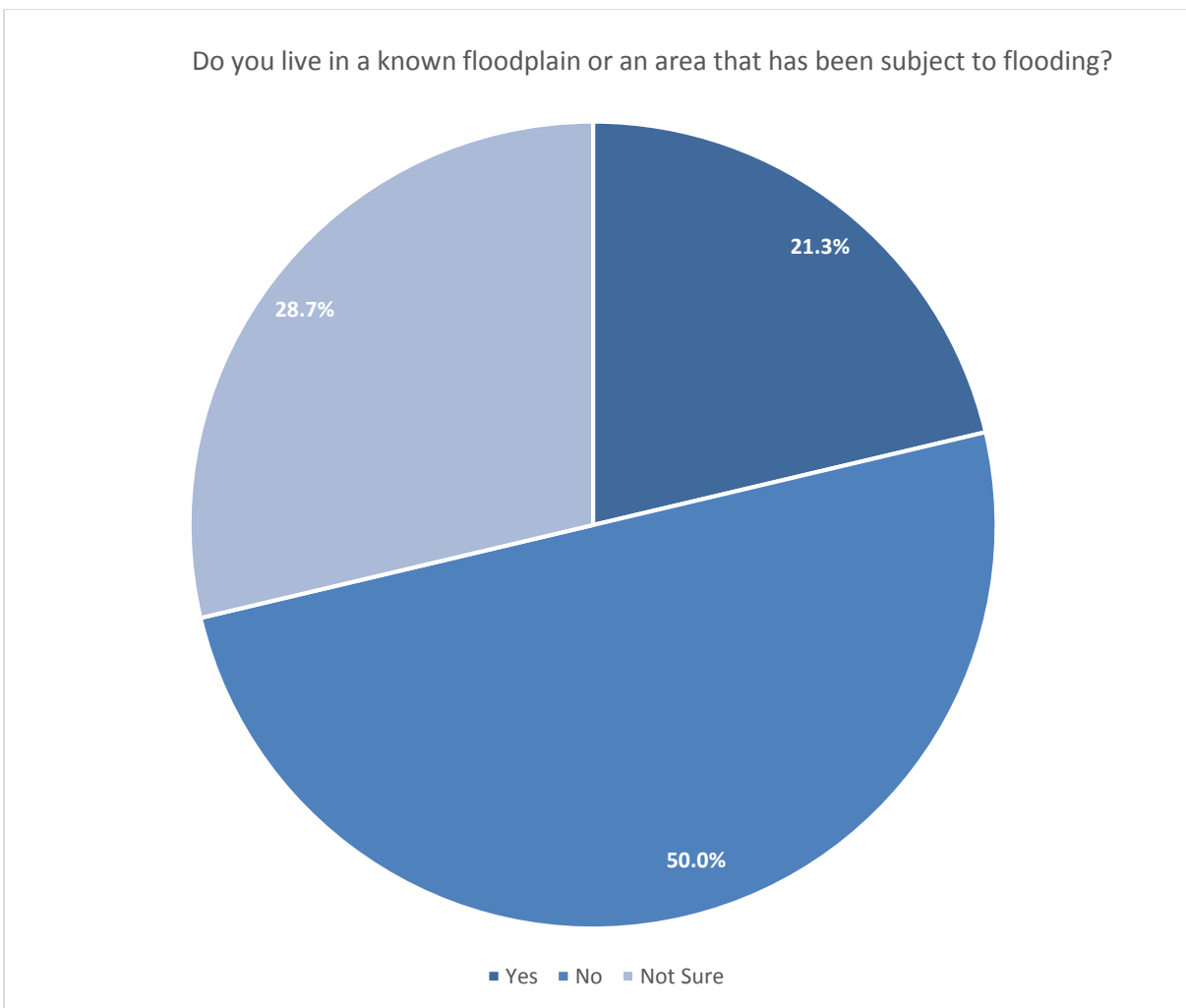
- Flood Hazards
- Flood Preparedness and Education
- Flood Control and Risk Reduction Measures

About the Survey Respondents

As noted above, 136 residents provided information via the survey to enhance the 2015 Comprehensive Floodplain Management Plan. All respondents were over the age of 18, and the number of responses per age group divided into a fairly even distribution (Question 27). While the majority of respondents were male (64.1 percent), women still provided a sizeable contribution of responses (Question 28). The majority of respondents had at least some college experience, if not a degree or graduate degree (combined total of 97.2 percent) (Question 29). Nine of the respondents also identified themselves as having a special access or functional need, alerting the County to their need for early warning or specialized response during a disaster event (Question 26).

The survey respondents were from a wide geographical range, representing 64 different ZIP codes (Question 2). Additionally, the majority of respondents were homeowners (80.9 percent) and not renters (Question 4). In Question 30, residents noted how long they had lived at their current property, with the largest response at 1 to 5 years (36.2 percent), followed by more than 20 years (21.9 percent), and then 11 to 20 years (18.1 percent). Of the respondents who definitely live in the floodplain, 25 percent indicated that the presence of a flood hazard was not disclosed to them prior to the purchase of their home (Question 18). Over 20 percent of respondents believe they live in a known floodplain or area subject to flooding, per Question 3. Of all respondents whose addresses could be geo-located for confirmation, 10.8 percent live in a known floodplain. Therefore, 65.5 percent of respondents who responded “yes” were unable to be confirmed as mapped floodplain residents.

The high percentage of residents who stated that they live in flood prone areas suggests several possibilities – (1) residents may be vulnerable to stormwater-flooding or flood-related hazards which can occur outside the floodplain, (2) current mapped floodplain boundaries may not accurately reflect changes in development or land use, or (3) residents would benefit from a public education and outreach program on flood zones and floodplains.



In the same question, respondents also provided feedback on areas that have experienced flooding, as well as different flood problems. While most flood instances were relatively minor (dirt and mud on roads after hard rains, minimal roadway easement runoff) or due to older infrastructure, including storm drains with insufficient capacity, some residents listed more severe problems. One person was not able to get home from their job in Burbank for over a week when Avenues J to T flooded from El Nino rains. Another shared that there is no flood control structure for a mile above their home in Altadena, resulting in their home routinely flooding.

Several residents also used the open response areas in the survey to request an evaluation of whether their home is located in the floodplain. Comments have indicated that, either due to a higher elevation or lack of flooding during their time of residency, their homes may not have the appropriate flood risk applied.

Perception of Flood Hazards

Question 12 asked respondents to rank how concerned they are about flood-related hazards in Los Angeles County, including hazards such as climate change impacts, tsunami, groundwater flooding, coastal flooding, river/channel migration, stream bank erosion, coastal erosion, urban flooding/drainage issues, land subsidence, and mudflow hazards.

Residents identified urban flooding/drainage issues as the hazard that they were most concerned, very concerned, or extremely concerned about (with 40.4 percent of residents indicating one of those levels). Climate change impacts were the second highest concern (with 35.6 percent concerned or higher), and mudflow hazards were the third highest concern (with 33.9 percent concerned or higher). Climate change and mudflow hazards were also selected as the two hazards where the most respondents indicated extremely concerned (5.8 percent and 4.1 percent, respectively, compared to other concern levels). Some respondents also identified other flood-related hazards, including heavy rains, earthquakes, the California aqueduct failure, and burn areas flooding after severe storms. California aqueduct failure was listed by two respondents, while the other hazards were only listed once.

Flood Preparedness and Education

Survey respondents were also asked a series of questions to gauge their level of preparedness and how they would like to receive preparedness/outreach information. When asked how prepared their household was in Question 9, 40.6 percent indicated feeling somewhat prepared. Only 10.4 percent felt either well prepared or very well prepared. In Question 24, where residents were asked to indicate how they felt about the statement, “Information about the risks associated with flood hazards is readily available and easy to locate,” 41.4 percent disagreed or strongly disagreed. These responses suggest that a potential area for the County to strengthen their flood management program to be helping residents understand where they can go to learn more about flood hazards and risk. Since 48.6 percent of respondents strongly agree (along with 30.5 percent of respondents somewhat agreeing) that it is one’s personal responsibility to educate themselves about flood risks, such a program should be well-received by residents (Question 23).

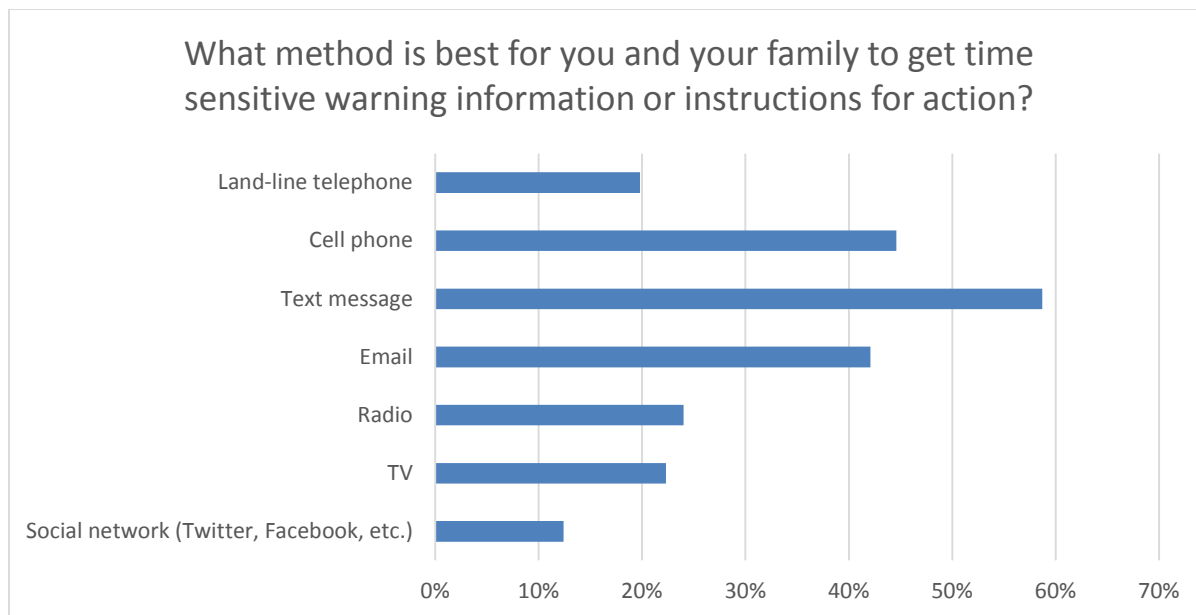
In Question 10, respondents checked all the sources that they believe to have provided them with useful information to prepare for a flood event. Federal, state, or local emergency management (45.6 percent) was the most frequent source. The other main sources of information included locally-provided news or media (29.8 percent) and personal experience (20.2 percent). Several respondents indicated work as an “other” source, and 25.4 percent did not use any information source.

Respondents additionally identified the top five methods they thought to be most effective in providing flood hazard information (Question 13), along with their preferred contact means for an emergency alert (Question 14). The top five flood information methods were:

- Internet (52.1 percent)
- TV News (47.9 percent)
- Radio News (43.8 percent)
- Public Awareness Campaign, e.g., Flood Awareness Week, Winter Storm Preparedness Month (32.2. percent)
- Social Media, e.g., Twitter, Facebook, etc. (32.2 percent)

Public Meetings, Local Government Newsletters, and the Newspaper also ranked at over 20 percent. The Chamber of Commerce and the Telephone Book were the lowest ranked, at 0.0 percent and 0.8 percent, respectively.

In regards to emergency alerts, respondents most preferred text messages (58.7 percent), cell phones (44.6 percent), and email (42.1 percent). Respondents also suggested amateur radio, US mail, and Community Emergency Response Team (CERT) networks as alternate contact methods beyond those listed by the County.

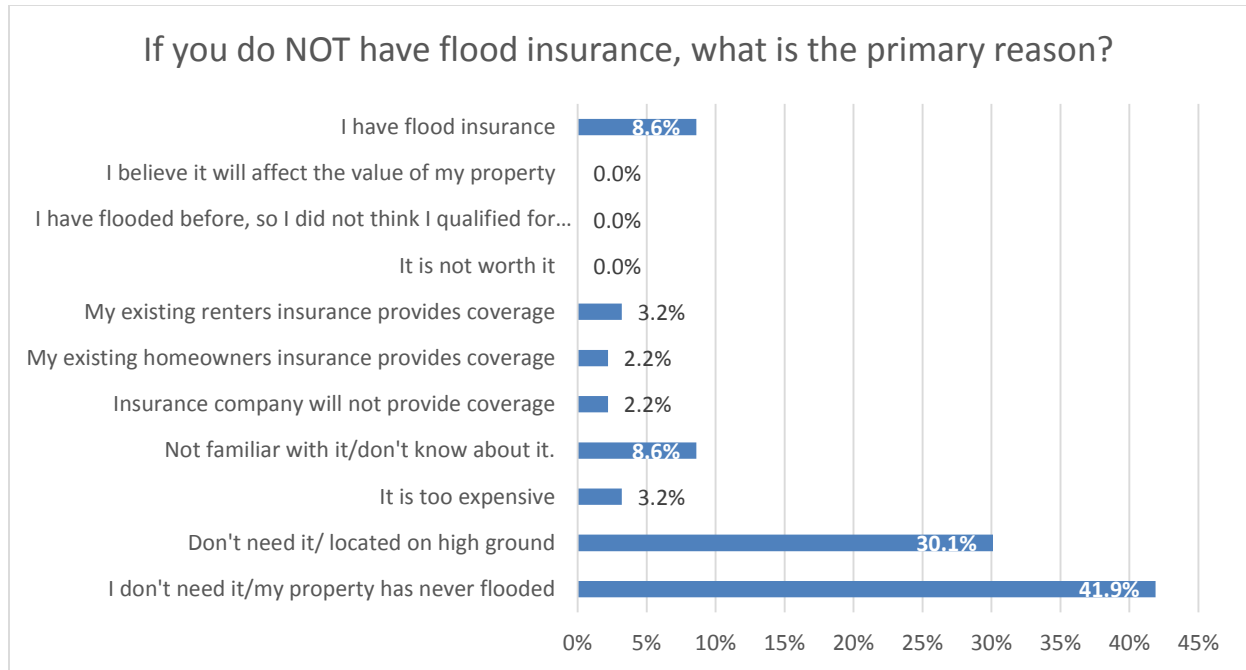


Flood Control and Risk Reduction Measures

Respondents had the opportunity to comment on different flood control and management measures, including both personal/residential activities and County-managed activities.

Flood Insurance

The National Flood Insurance Program (NFIP) is one of the more well-known flood risk management programs in place. Question 15 evaluated how many respondents have flood insurance, with 14.9 percent of respondents answering yes, 69.4 with no, and 15.7 percent as not sure. Most respondents that do not have flood insurance said that this is due to not needing it (property never having flooded) (41.9 percent) or not needing it (property located at high ground) (30.1 percent) (Question 16). Other reasons listed included an inability to afford more insurance, living on the 2nd floor, and not being sure how to tell whether homeowners insurance includes flood insurance. Some residents used the open response portion of this question to request clarification on their flood zone risk and whether they were required to have it, similar to in Question 3.



Government-Sponsored Programs

In Question 22, respondents indicated whether they believed that the government (local, state, and federal) has the responsibility to provide education and programs promoting citizen action to reduce exposure to risks associated with flood hazard. The response was positive, with 33.3 percent strongly agreeing and 37.1 percent somewhat agreeing. In Question 21, respondents ranked the types of government-sponsored projects they support in the following order:

- Retrofitting infrastructure (improving culverts, bridges, and local drainage)
- Capital projects (dams, levees, flood walls, and drainage improvements)
- Providing better flood risk information to the public
- Strengthening codes and regulations to higher regulatory standards
- Acquiring vulnerable properties and maintaining them as open space
- Assisting vulnerable property owners with securing mitigation funding
- Other measures (including raising flood insurance rates for repetitive loss properties and updated flood maps)

At a personal level, most respondents were not sure (39.2 percent) how much they would be willing to spend to retrofit their homes against flood disasters (Question 6). Of those willing to invest in retrofitting their homes, 7.8 percent would spend \$10,000 or more, 4.9 percent would spend \$5,000 to \$9,999, 12.7 percent would spend \$1,000 to \$4,999, and 7.8 percent would spend less than \$1,000. The most popular incentive to retrofit, as identified in Question 7, was grant funding (62.4 percent), with low-interest rate home improvement loans (27.7 percent) and none (24.8 percent) scoring close together. Other suggested incentives included tax deductions, removal of flood insurance requirements, and budgeting for the CSD, which maintains a local flood channel.

SURVEY RESPONSES AND CHARTS

Question 1

What is your home address?		
Answer Options	Response Percent	Response Count
Street Address	99.0%	102
City	100.0%	103
<i>answered question</i>		103
<i>skipped question</i>		33

Question 2

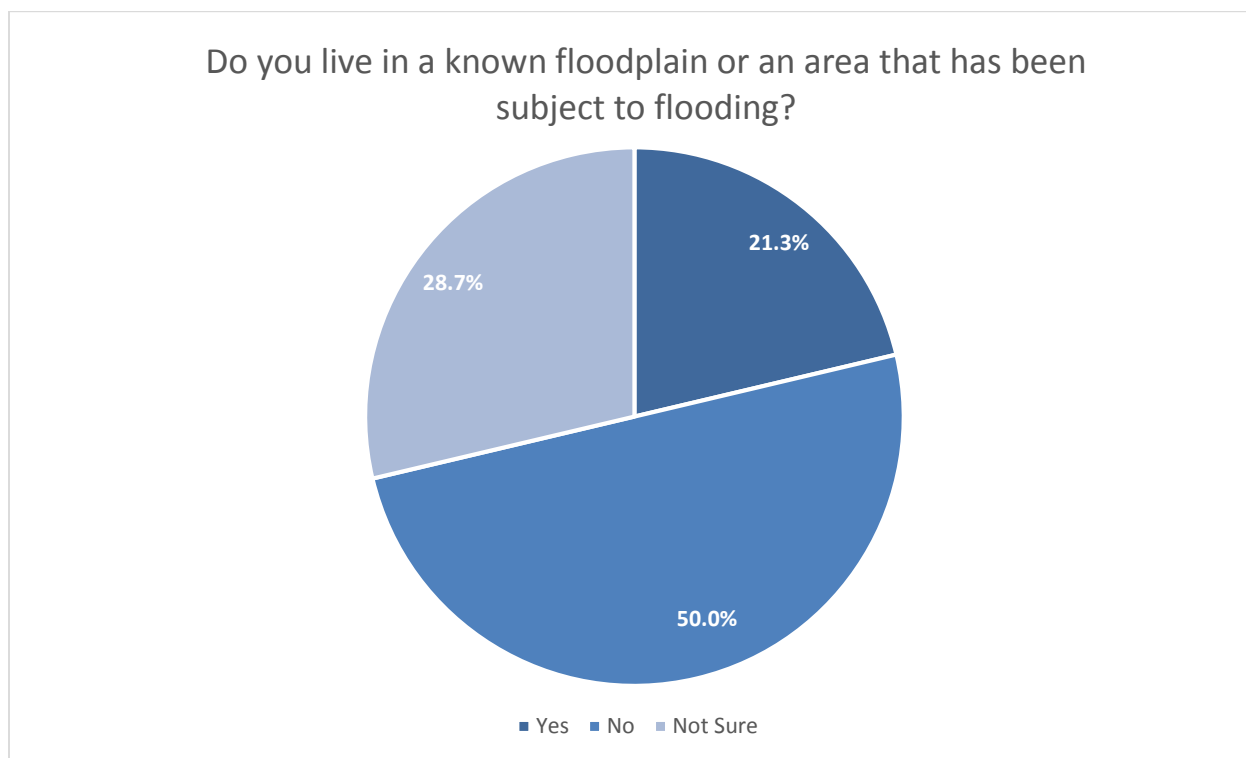
What is your zip code?			
Answer Options	Response Average	Response Total	Response Count
Zip Code	N/A	N/A	128
<i>answered question</i>			128
<i>skipped question</i>			8

ZIP Code	Number of Respondents	Percent of Total	ZIP Code	Number of Respondents	Percent of Total
90005	1	1.56%	91301	7	10.94%
90022	1	1.56%	91302	2	3.13%
90027	1	1.56%	91304	1	1.56%
90034	1	1.56%	91324	3	4.69%
90046	1	1.56%	91364	1	1.56%
90069	1	1.56%	91387	2	3.13%
90230	1	1.56%	91390	4	6.25%
90245	1	1.56%	91501	1	1.56%
90265	1	1.56%	91702	1	1.56%
90270	1	1.56%	91724	1	1.56%
90272	1	1.56%	91745	1	1.56%
90275	1	1.56%	91754	2	3.13%
90501	1	1.56%	91765	2	3.13%
90504	1	1.56%	91780	1	1.56%
90604	1	1.56%	91784	1	1.56%
90606	2	3.13%	91789	2	3.13%
90650	1	1.56%	91791	2	3.13%
90731	1	1.56%	91801	1	1.56%
90815	2	3.13%	91803	1	1.56%
90909	1	1.56%	92503	1	1.56%
91001	9	14.06%	92647	1	1.56%
91006	2	3.13%	93455	1	1.56%
91016	1	1.56%	93510	4	6.25%
91020	1	1.56%	93535	3	4.69%
91030	2	3.13%	93536	3	4.69%
91040	1	1.56%	93544	20	31.25%
91101	1	1.56%	93551	1	1.56%
91103	1	1.56%	93552	1	1.56%
91104	4	6.25%	93553	1	1.56%
91107	2	3.13%	93560	1	1.56%
91206	1	1.56%	93591	6	9.38%
91208	1	1.56%	93644	1	1.56%

Question 3

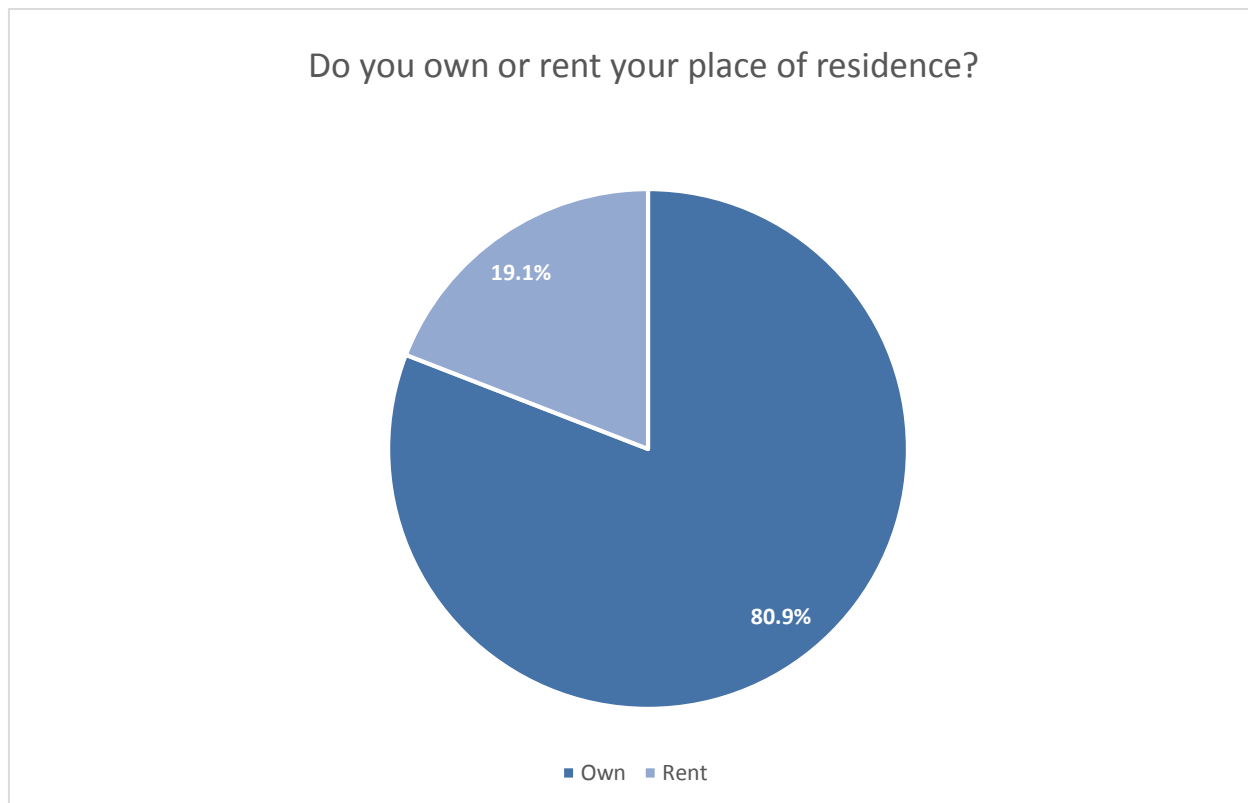
Do you live in a known floodplain or an area that has been subject to flooding?		
Answer Options	Response Percent	Response Count
Yes	21.3%	29
No	50.0%	68
Not Sure	28.7%	39
Please describe any experiences you have had with flooding at your current residence:		63
answered question		136
skipped question		0

Note: Responses above are based on respondents' personal knowledge and perception. In contrast, based on geo-located addresses, 10.8 percent of respondents live in a known floodplain. 34.5 percent of respondents who indicated "yes" correctly identified themselves as living in the floodplain. The other 65.5 percent were either incorrect, did not provide their addresses, live in addresses that could not be geo-located or live in areas that are not mapped floodplains. Only 1.5 percent of respondents who indicated "no" incorrectly identified themselves as not living in the floodplain. All respondents who selected "not sure" either do not live in the floodplain or had addresses that could not be geo-located for confirmation. 72 percent of respondents provided addresses that could be geo-located to confirm location in relation to the mapped floodplain.



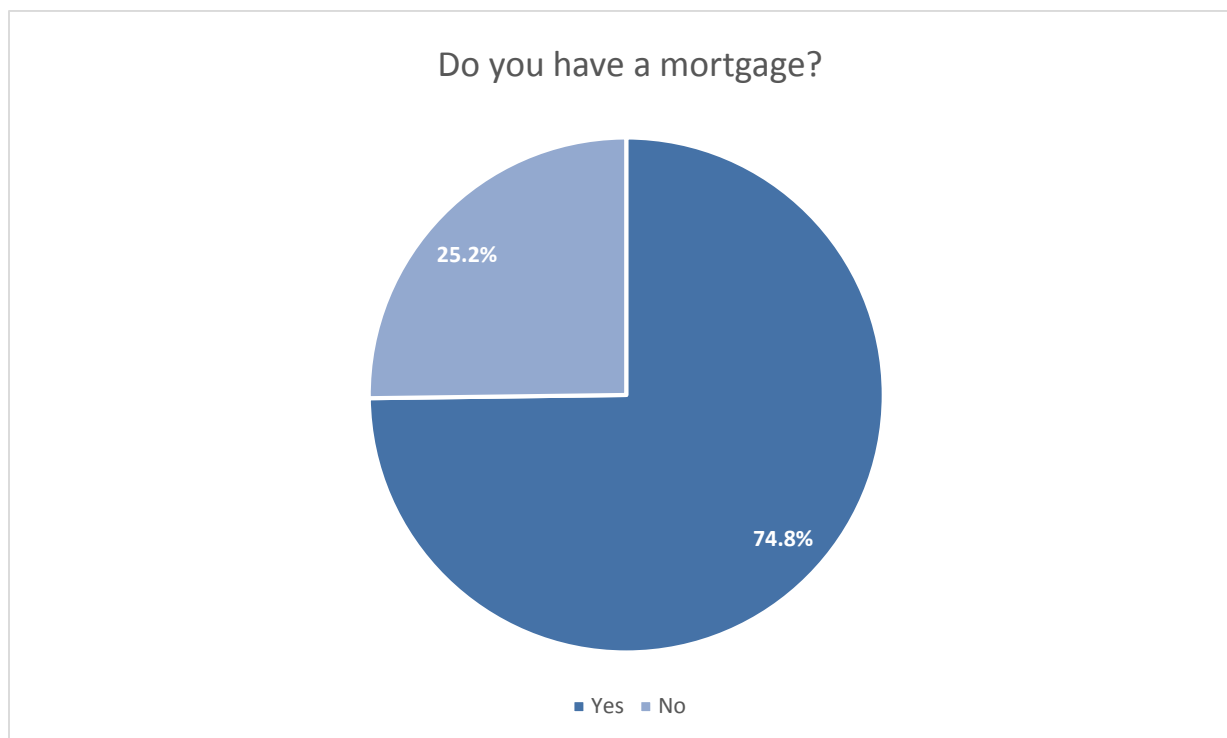
Question 4

Do you own or rent your place of residence?		
Answer Options	Response Percent	Response Count
Own	80.9%	110
Rent	19.1%	26
answered question		136
skipped question		0



Question 5

Do you have a mortgage?		
Answer Options	Response Percent	Response Count
Yes	74.8%	80
No	25.2%	27
answered question		107
skipped question		29

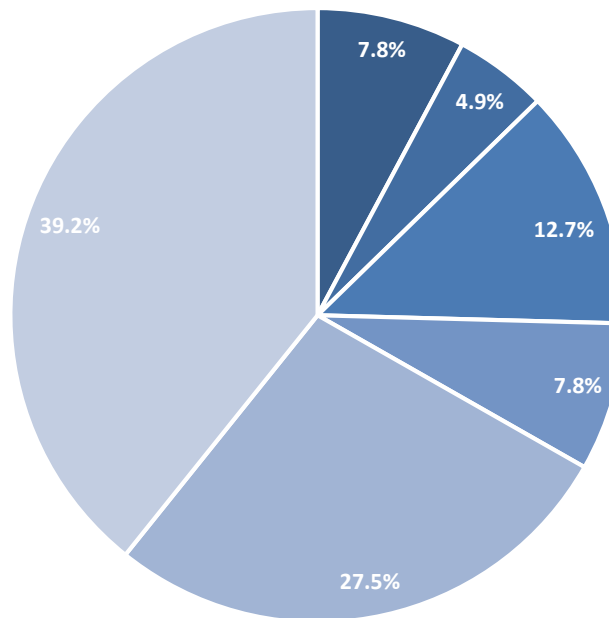


Question 6

How much money would you be willing to spend to retrofit your home to reduce risks associated with flood disasters? (e.g., elevating a home above flood level, flood-proofing, building berms or floodwalls)

Answer Options	Response Percent	Response Count
\$10,000 or above	7.8%	8
\$5,000 to \$9,999	4.9%	5
\$1,000 to \$4,999	12.7%	13
Less than \$1,000	7.8%	8
Nothing	27.5%	28
Not Sure	39.2%	40
answered question		102
skipped question		34

How much money would you be willing to spend to retrofit your home to reduce risks associated with flood disasters? (e.g., elevating a home above flood level, flood-proofing, building berms or floodwalls)

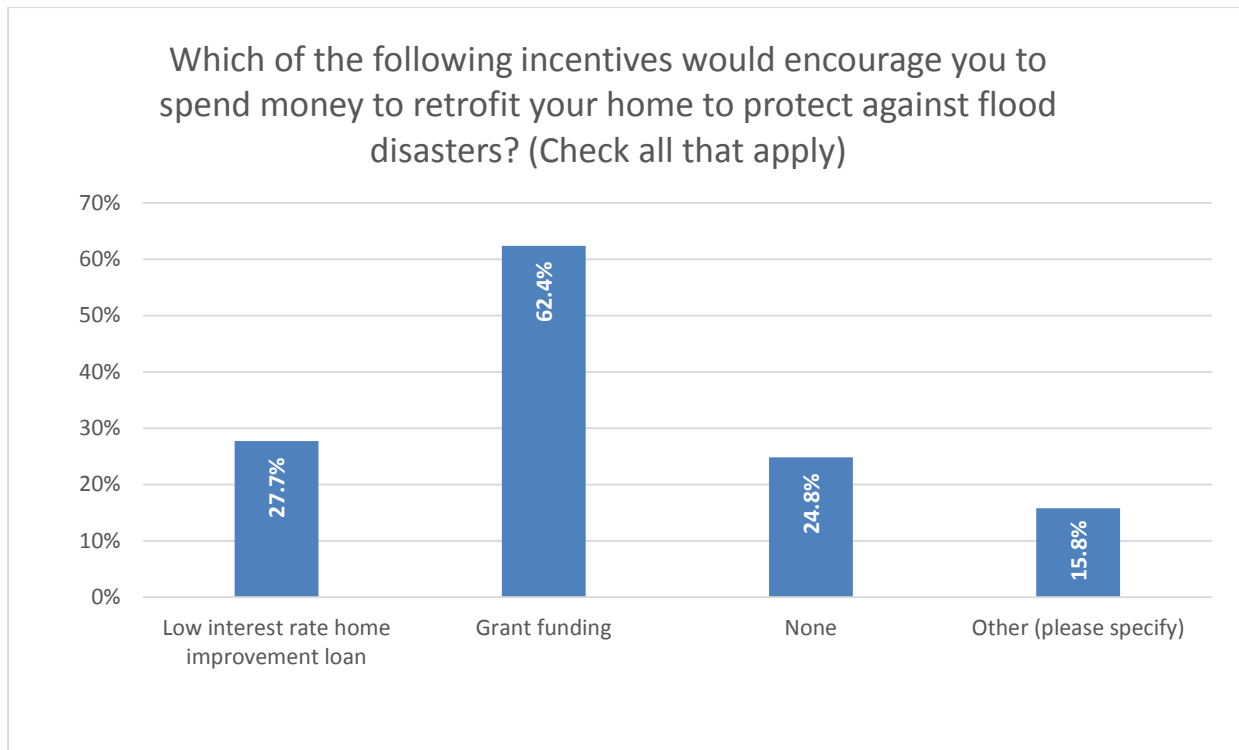


■ \$10,000 or above ■ \$5,000 to \$9,999 ■ \$1,000 to \$4,999 ■ Less than \$1,000 ■ Nothing ■ Not Sure

Question 7

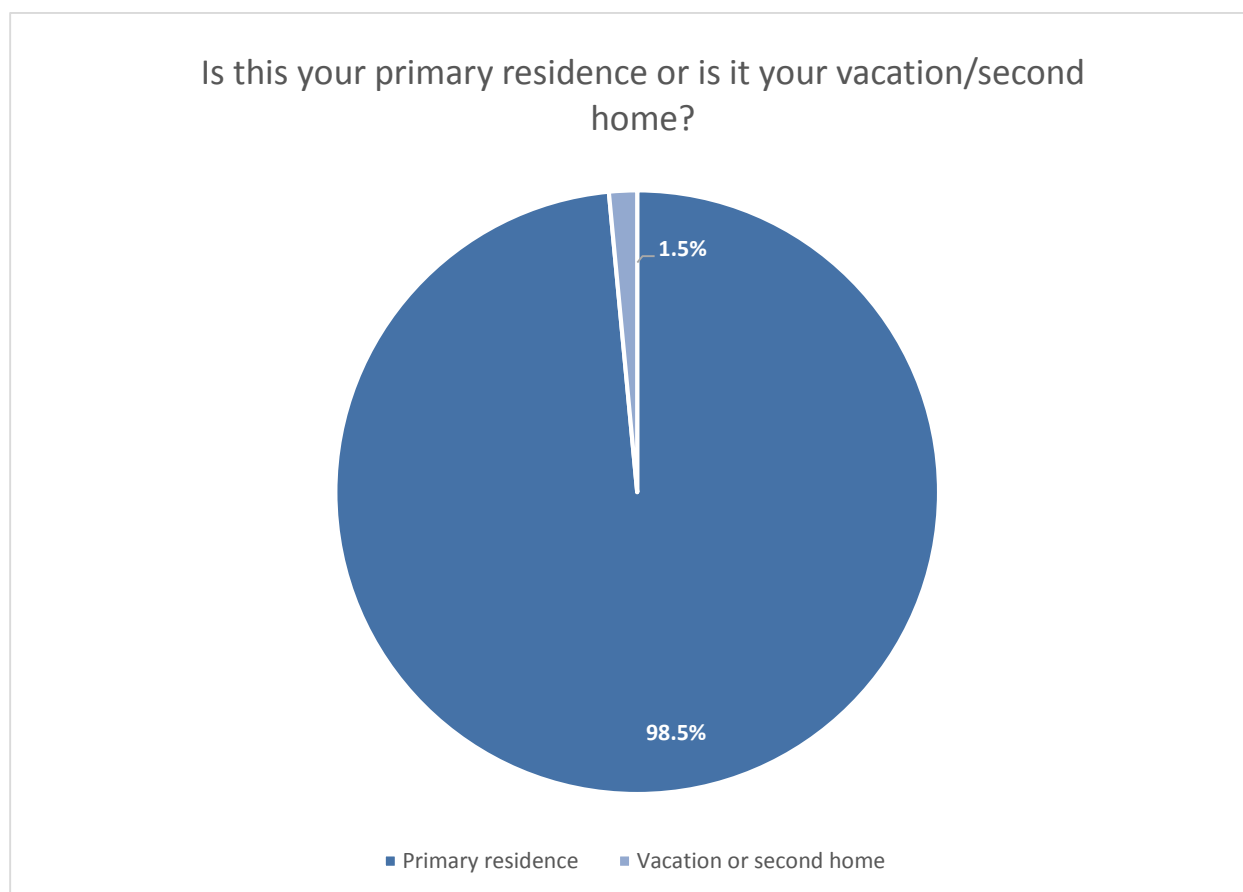
Which of the following incentives would encourage you to spend money to retrofit your home to protect against flood disasters? (Check all that apply)

Answer Options	Response Percent	Response Count
Low interest rate home improvement loan	27.7%	28
Grant funding	62.4%	63
None	24.8%	25
Other (please specify)	15.8%	16
answered question		101
skipped question		35



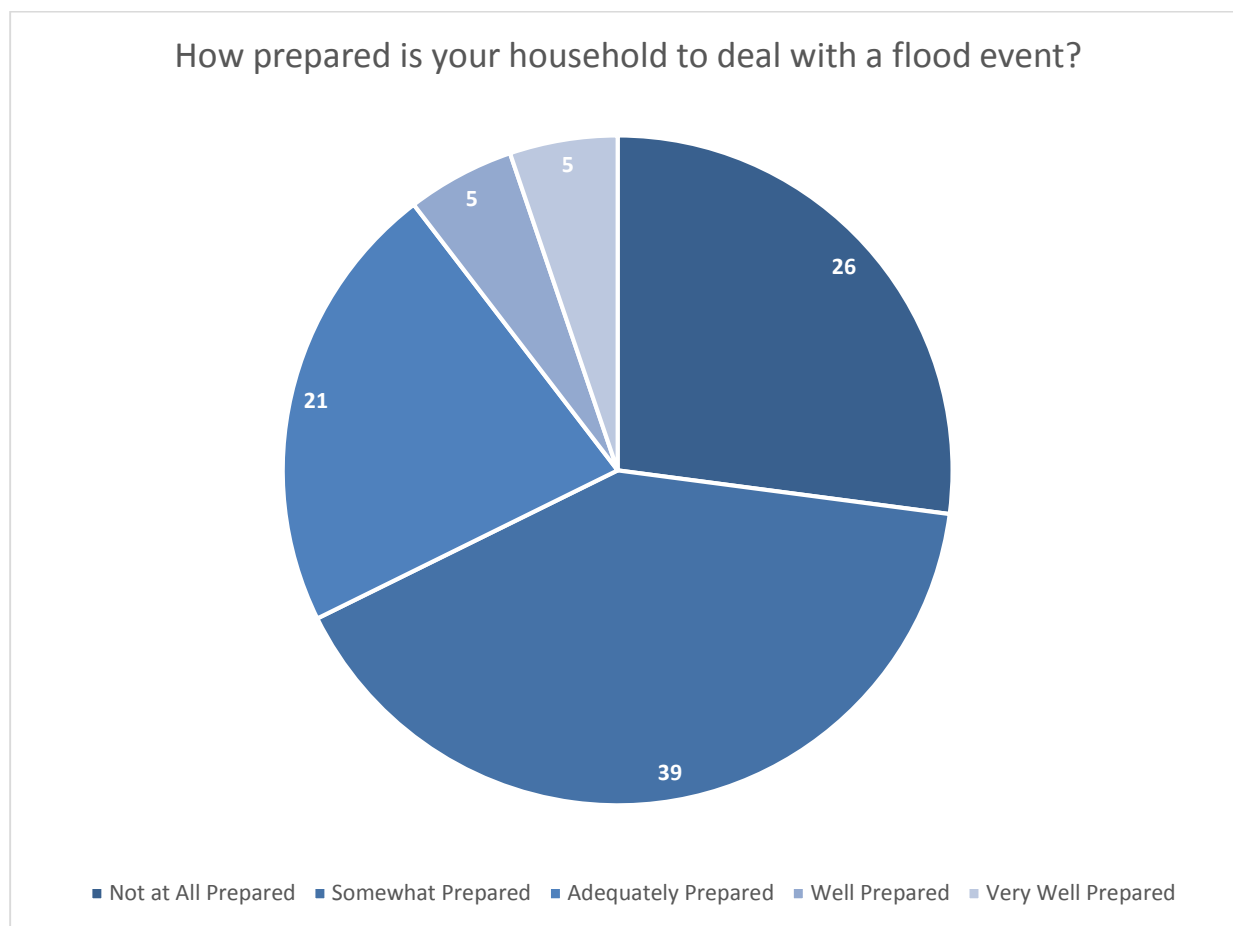
Question 8

Is this your primary residence or is it your vacation/second home?		
Answer Options	Response Percent	Response Count
Primary residence	98.5%	131
Vacation or second home	1.5%	2
answered question		133
skipped question		3



Question 9

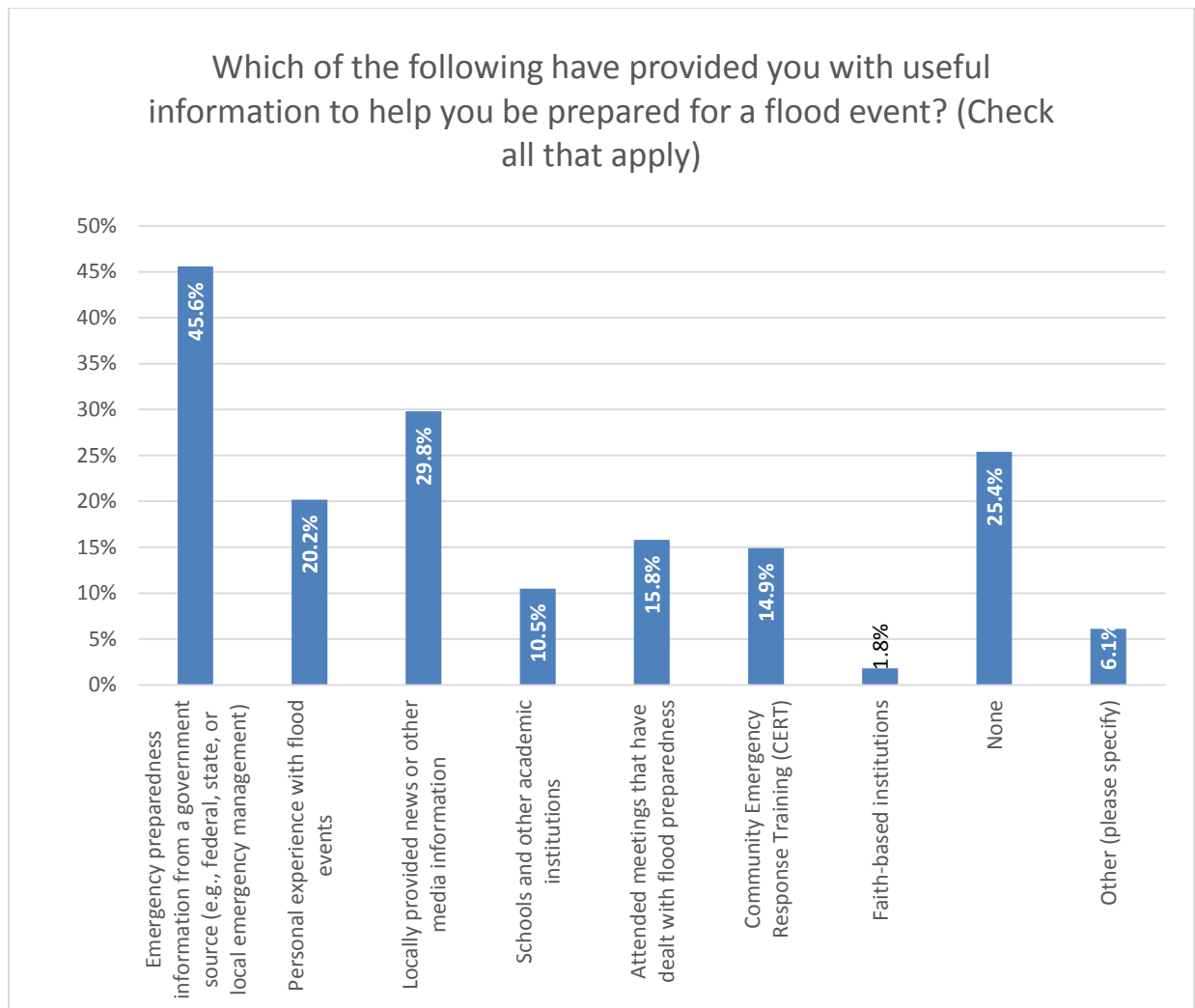
How prepared is your household to deal with a flood event?							
Answer Options	Not at All Prepared	Somewhat Prepared	Adequately Prepared	Well Prepared	Very Well Prepared	Rating Average	Response Count
Check one (Count):	26	39	21	5	5	2.21	96
Percent:	27%	41%	22%	5%	5%		
answered question							96
skipped question							40



Question 10

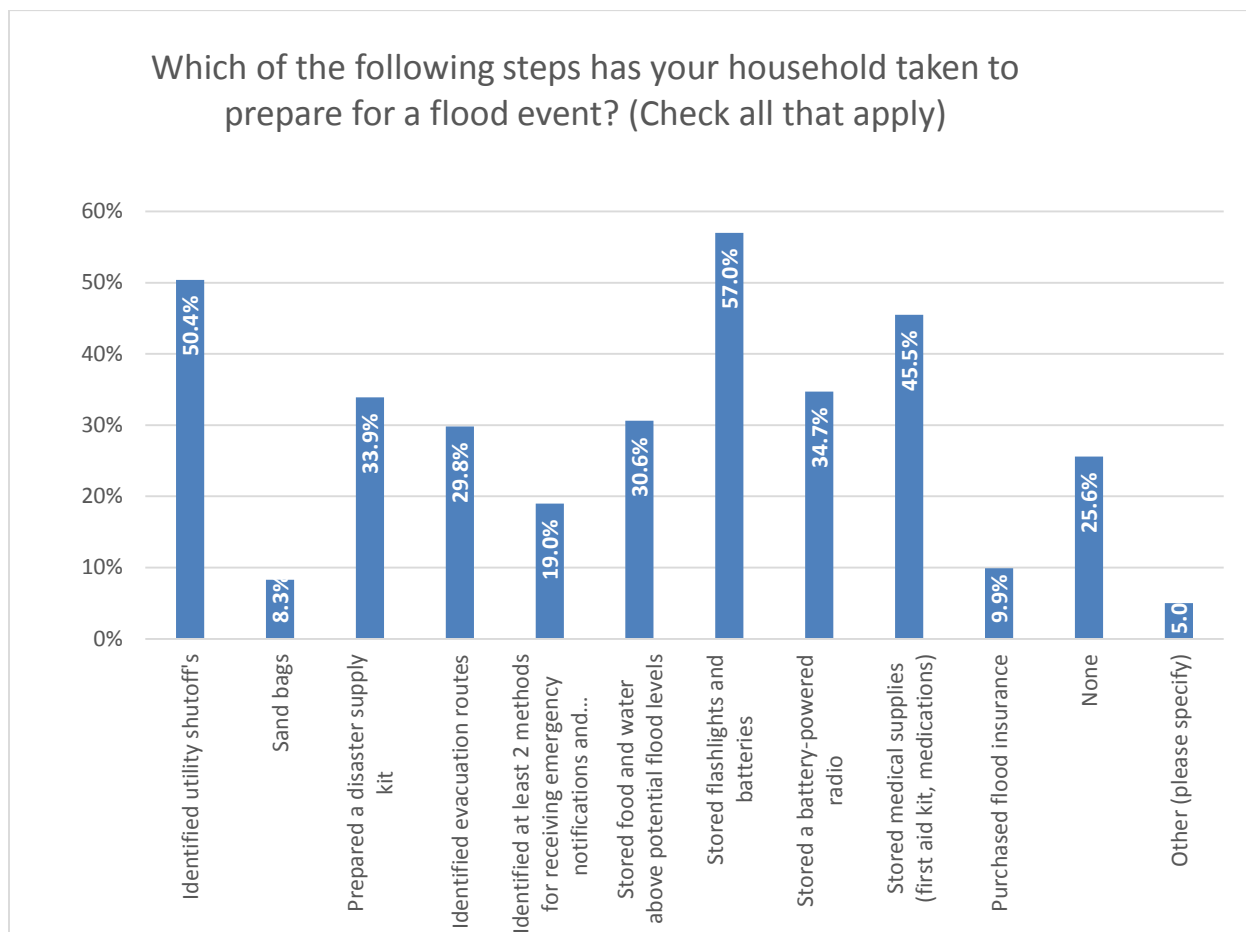
Which of the following have provided you with useful information to help you be prepared for a flood event? (Check all that apply)

Answer Options	Response Percent	Response Count
Emergency preparedness information from a government source (e.g., federal, state, or local emergency management)	45.6%	52
Personal experience with flood events	20.2%	23
Locally provided news or other media information	29.8%	34
Schools and other academic institutions	10.5%	12
Attended meetings that have dealt with flood preparedness	15.8%	18
Community Emergency Response Training (CERT)	14.9%	17
Faith-based institutions	1.8%	2
None	25.4%	29
Other (please specify)	6.1%	7
answered question		114
skipped question		22



Question 11

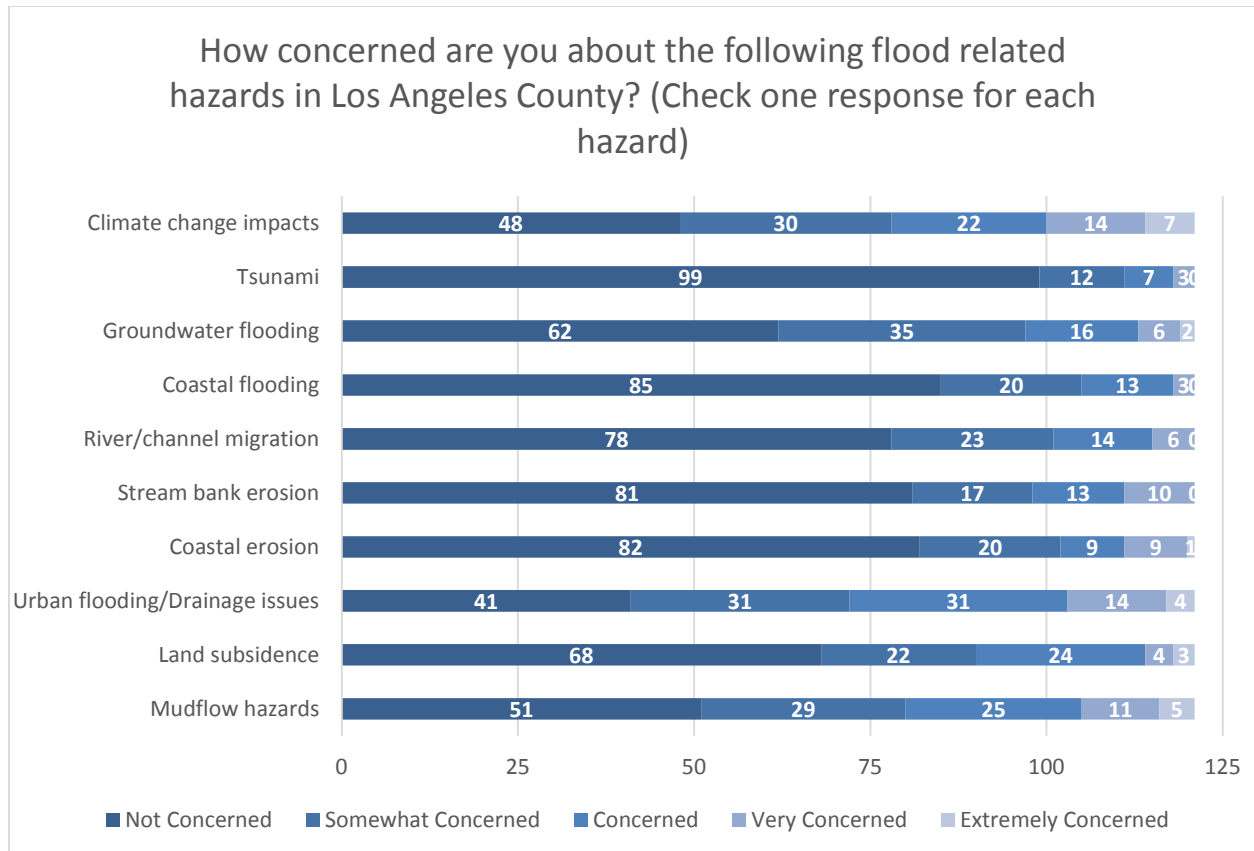
Which of the following steps has your household taken to prepare for a flood event? (Check all that apply)		
Answer Options	Response Percent	Response Count
Identified utility shutoff's	50.4%	61
Sand bags	8.3%	10
Prepared a disaster supply kit	33.9%	41
Identified evacuation routes	29.8%	36
Identified at least 2 methods for receiving emergency notifications and information during emergencies	19.0%	23
Stored food and water above potential flood levels	30.6%	37
Stored flashlights and batteries	57.0%	69
Stored a battery-powered radio	34.7%	42
Stored medical supplies (first aid kit, medications)	45.5%	55
Purchased flood insurance	9.9%	12
None	25.6%	31
Other (please specify)	5.0%	6
answered question		121
skipped question		15



Question 12

How concerned are you about the following flood related hazards in Los Angeles County? (Check one response for each hazard)

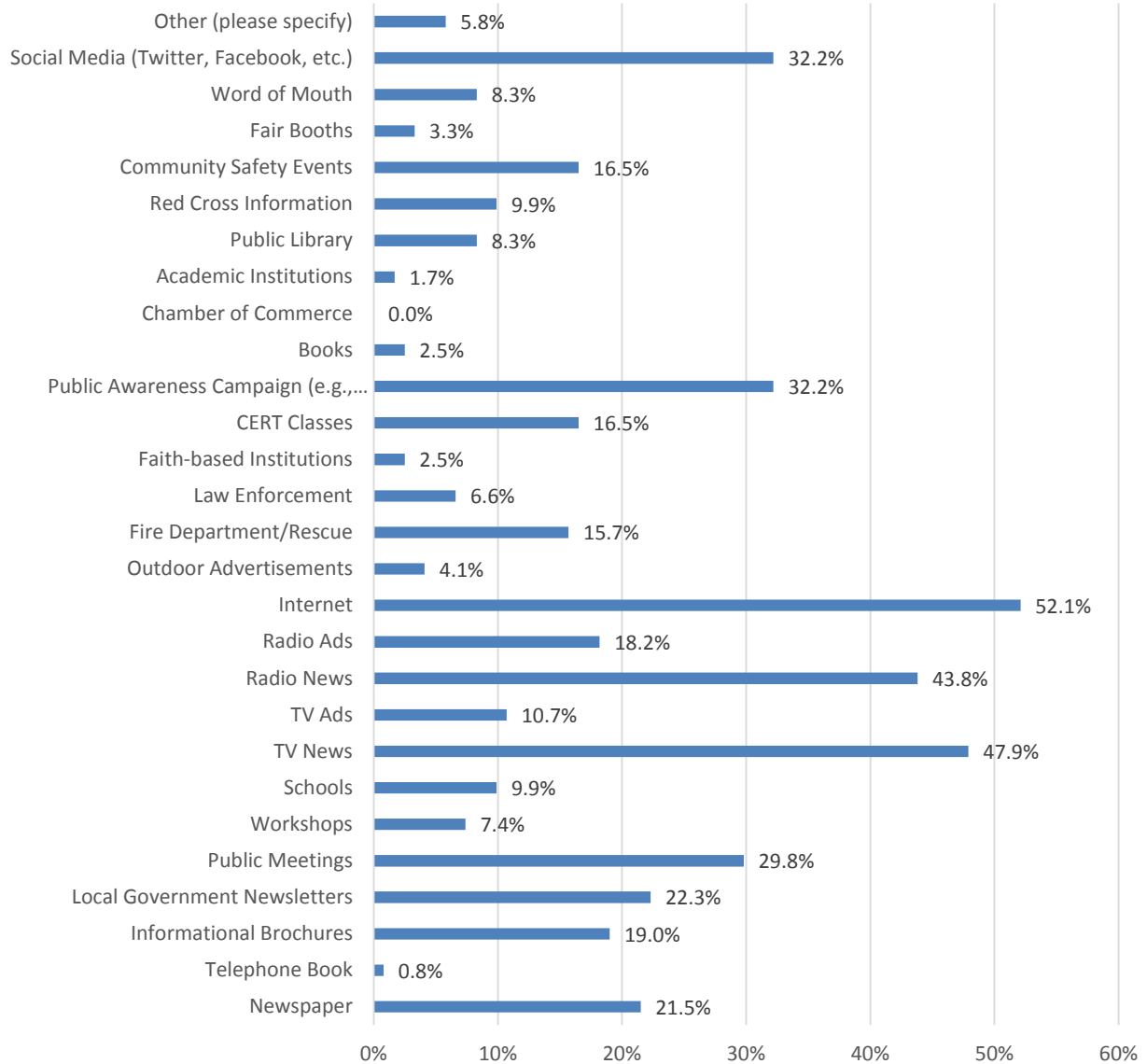
Answer Options	Not Concerned	Somewhat Concerned	Concerned	Very Concerned	Extremely Concerned	Rating Average	Response Count
Climate change impacts	48	30	22	14	7	2.19	121
Tsunami	99	12	7	3	0	1.29	121
Groundwater flooding	62	35	16	6	2	1.77	121
Coastal flooding	85	20	13	3	0	1.45	121
River/channel migration	78	23	14	6	0	1.57	121
Stream bank erosion	81	17	13	10	0	1.60	121
Coastal erosion	82	20	9	9	1	1.57	121
Urban flooding/Drainage issues	41	31	31	14	4	2.25	121
Land subsidence	68	22	24	4	3	1.78	121
Mudflow hazards	51	29	25	11	5	2.09	121
Other (Please specify other flood-related hazard and level of concern)							6
answered question							121
skipped question							15



Question 13

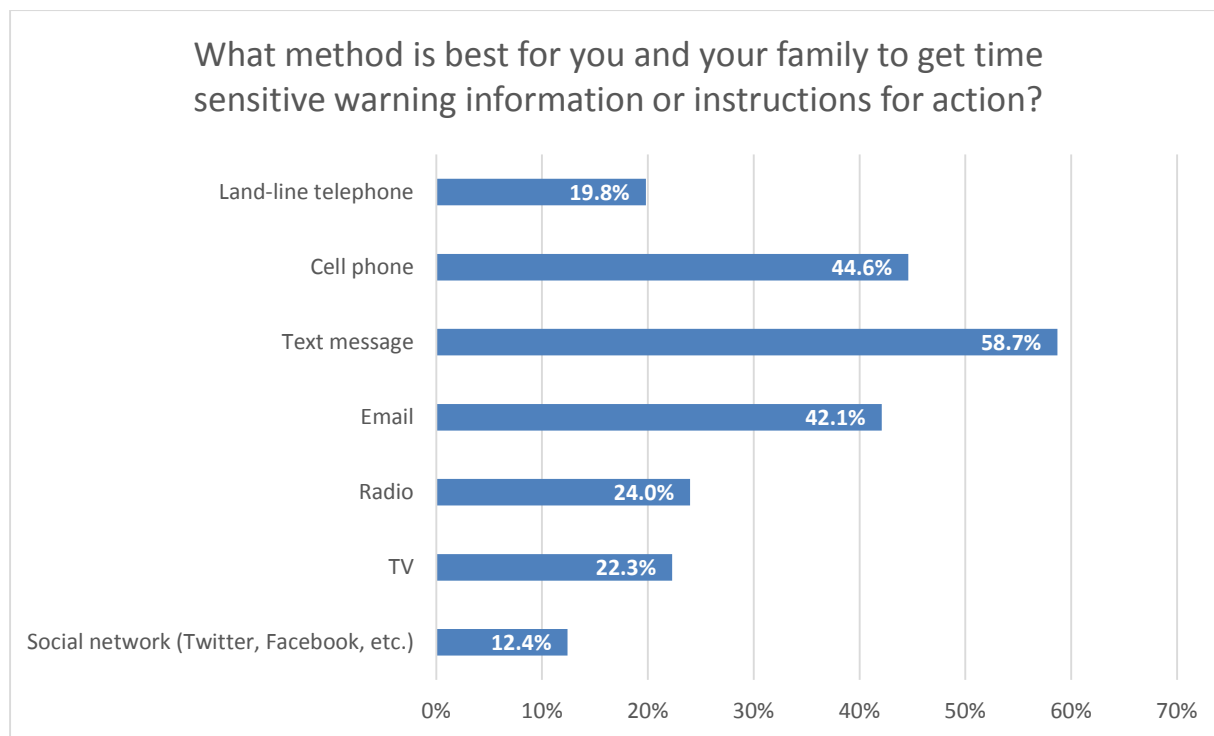
Choose five of the following methods you think are most effective for providing flood hazard and disaster information? (Choose up to 5 answers)		
Answer Options	Response Percent	Response Count
Newspaper	21.5%	26
Telephone Book	0.8%	1
Informational Brochures	19.0%	23
Local Government Newsletters	22.3%	27
Public Meetings	29.8%	36
Workshops	7.4%	9
Schools	9.9%	12
TV News	47.9%	58
TV Ads	10.7%	13
Radio News	43.8%	53
Radio Ads	18.2%	22
Internet	52.1%	63
Outdoor Advertisements	4.1%	5
Fire Department/Rescue	15.7%	19
Law Enforcement	6.6%	8
Faith-based Institutions	2.5%	3
CERT Classes	16.5%	20
Public Awareness Campaign (e.g., Flood Awareness Week, Winter Storm Preparedness Month)	32.2%	39
Books	2.5%	3
Chamber of Commerce	0.0%	0
Academic Institutions	1.7%	2
Public Library	8.3%	10
Red Cross Information	9.9%	12
Community Safety Events	16.5%	20
Fair Booths	3.3%	4
Word of Mouth	8.3%	10
Social Media (Twitter, Facebook, etc.)	32.2%	39
Other (please specify)	5.8%	7
answered question		121
skipped question		15

Choose five of the following methods you think are most effective for providing flood hazard and disaster information? (Choose up to 5 answers)



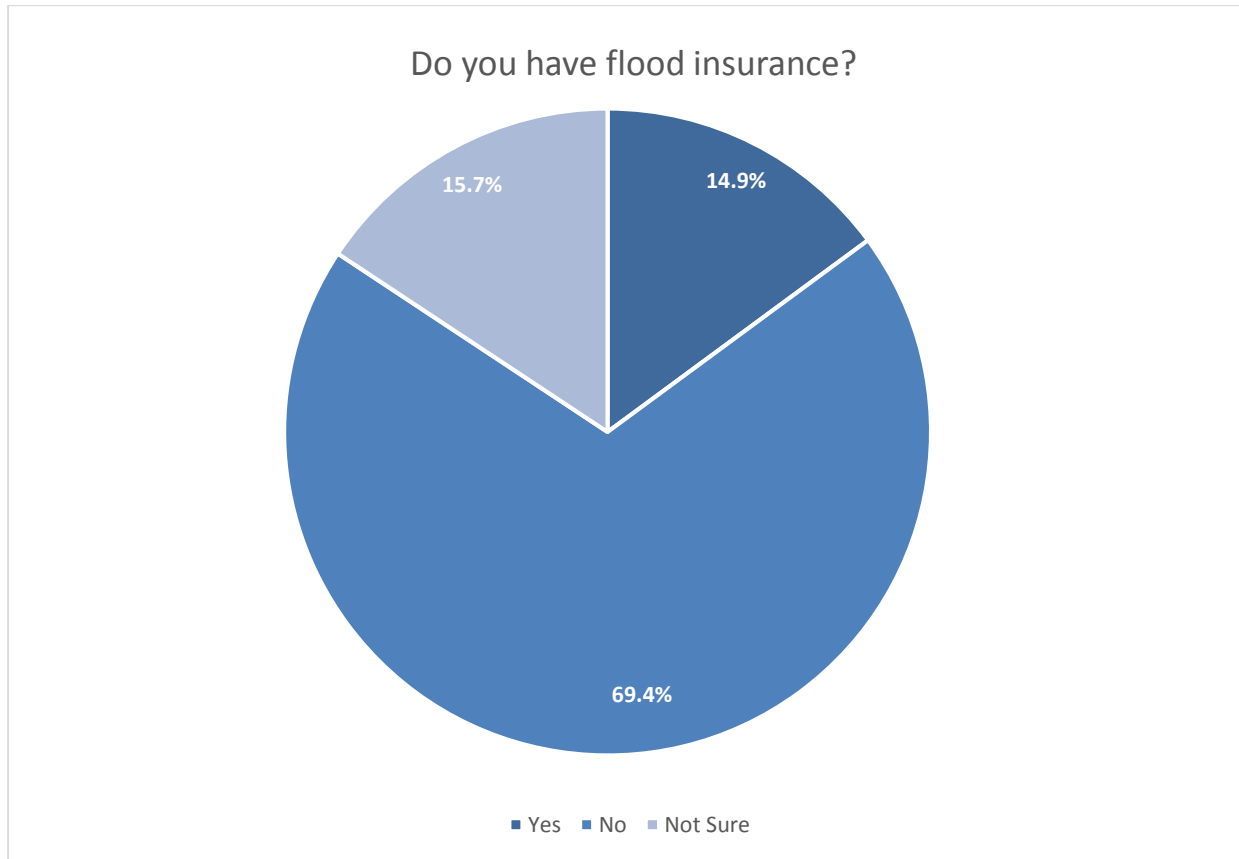
Question 14

What method is best for you and your family to get time sensitive warning information or instructions for action?		
Answer Options	Response Percent	Response Count
Land-line telephone	19.8%	24
Cell phone	44.6%	54
Text message	58.7%	71
Email	42.1%	51
Radio	24.0%	29
TV	22.3%	27
Social network (Twitter, Facebook, etc.)	12.4%	15
Other (please specify)		4
answered question		121
skipped question		15



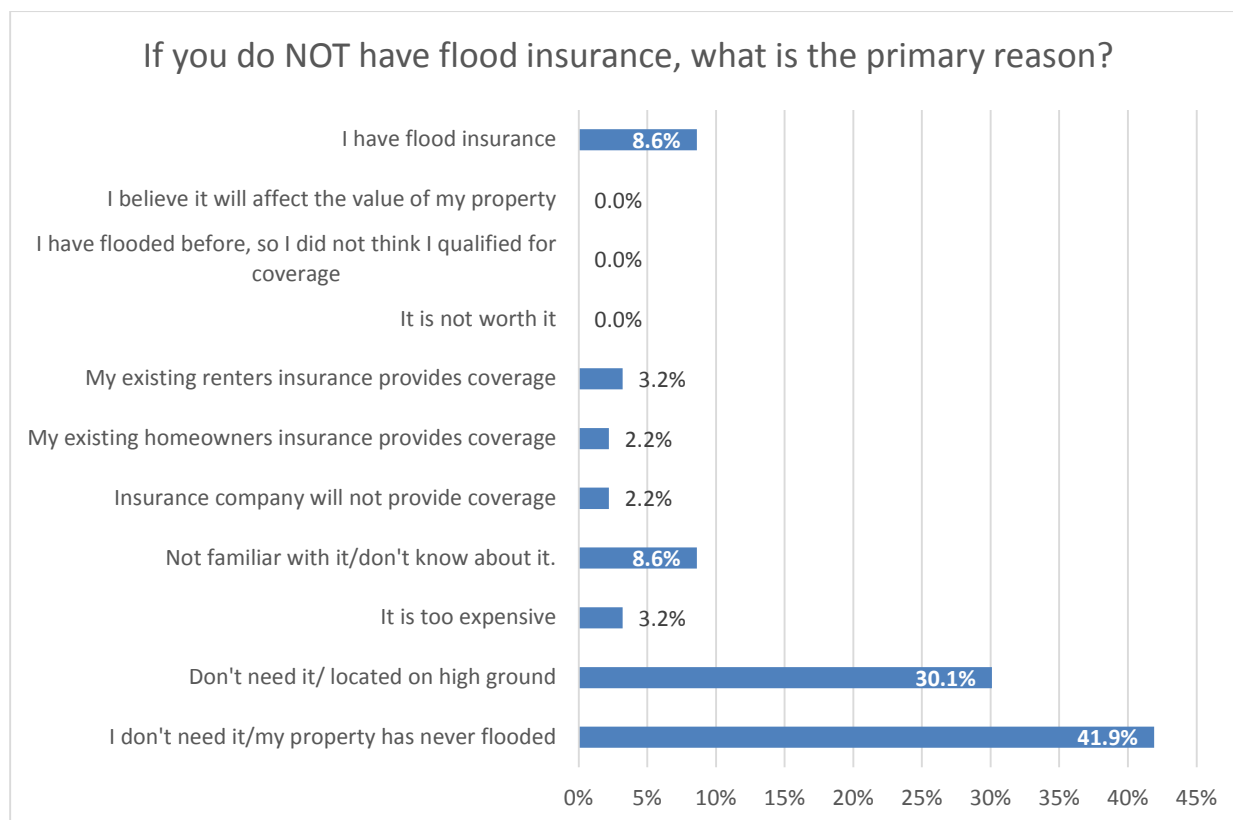
Question 15

Do you have flood insurance?		
Answer Options	Response Percent	Response Count
Yes	14.9%	18
No	69.4%	84
Not Sure	15.7%	19
answered question		121
skipped question		15



Question 16

If you do NOT have flood insurance, what is the primary reason?		
Answer Options	Response Percent	Response Count
I don't need it/my property has never flooded	41.9%	39
Don't need it/ located on high ground	30.1%	28
It is too expensive	3.2%	3
Not familiar with it/don't know about it.	8.6%	8
Insurance company will not provide coverage	2.2%	2
My existing homeowners insurance provides coverage	2.2%	2
My existing renters insurance provides coverage	3.2%	3
It is not worth it	0.0%	0
I have flooded before, so I did not think I qualified for coverage	0.0%	0
I believe it will affect the value of my property	0.0%	0
I have flood insurance	8.6%	8
Other (please specify)		7
answered question		93
skipped question		43

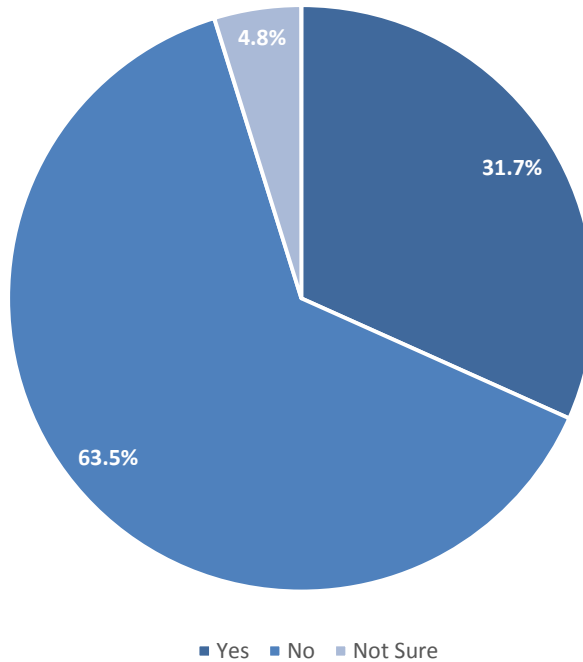


Question 17

When you moved into your home, did you consider the impact a potential flood could have on your home?

Answer Options	Response Percent	Response Count
Yes	31.7%	33
No	63.5%	66
Not Sure	4.8%	5
answered question		104
skipped question		32

When you moved into your home, did you consider the impact
a potential flood could have on your home?

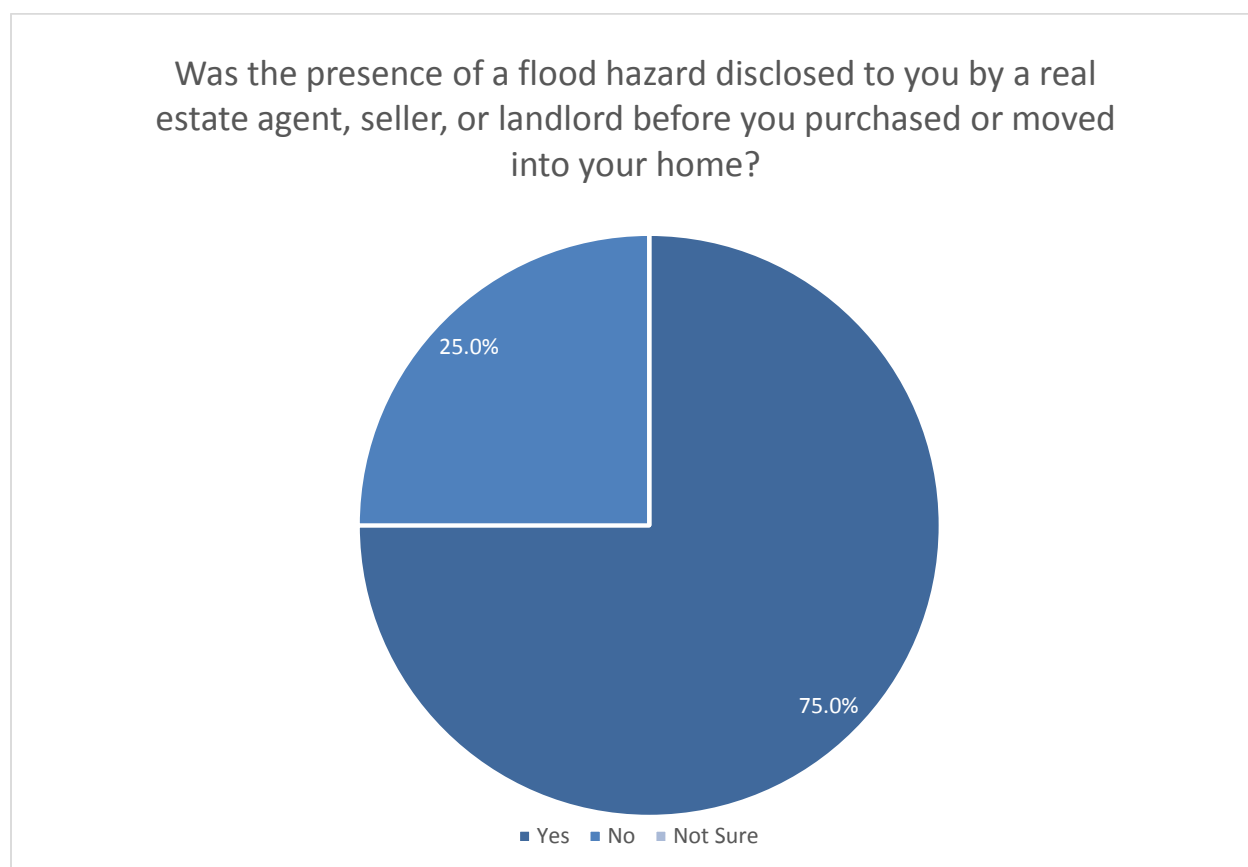


Question 18

Was the presence of a flood hazard disclosed to you by a real estate agent, seller, or landlord before you purchased or moved into your home?

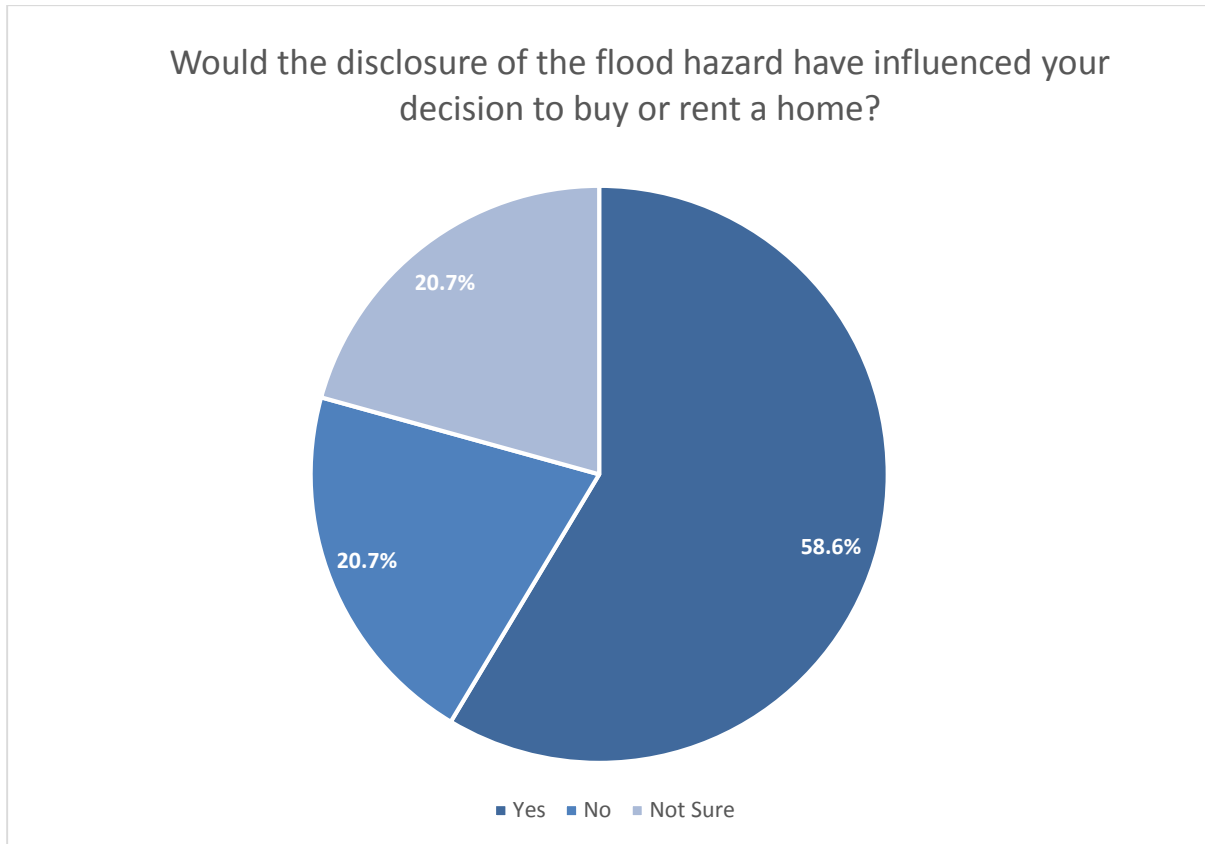
Answer Options	Response Percent	Response Count
Yes	75.0%	6
No	25.0%	2
Not Sure	0.0%	0
answered question		8
skipped question		3

Note: Only responses from residents located in the floodplain are indicated here.



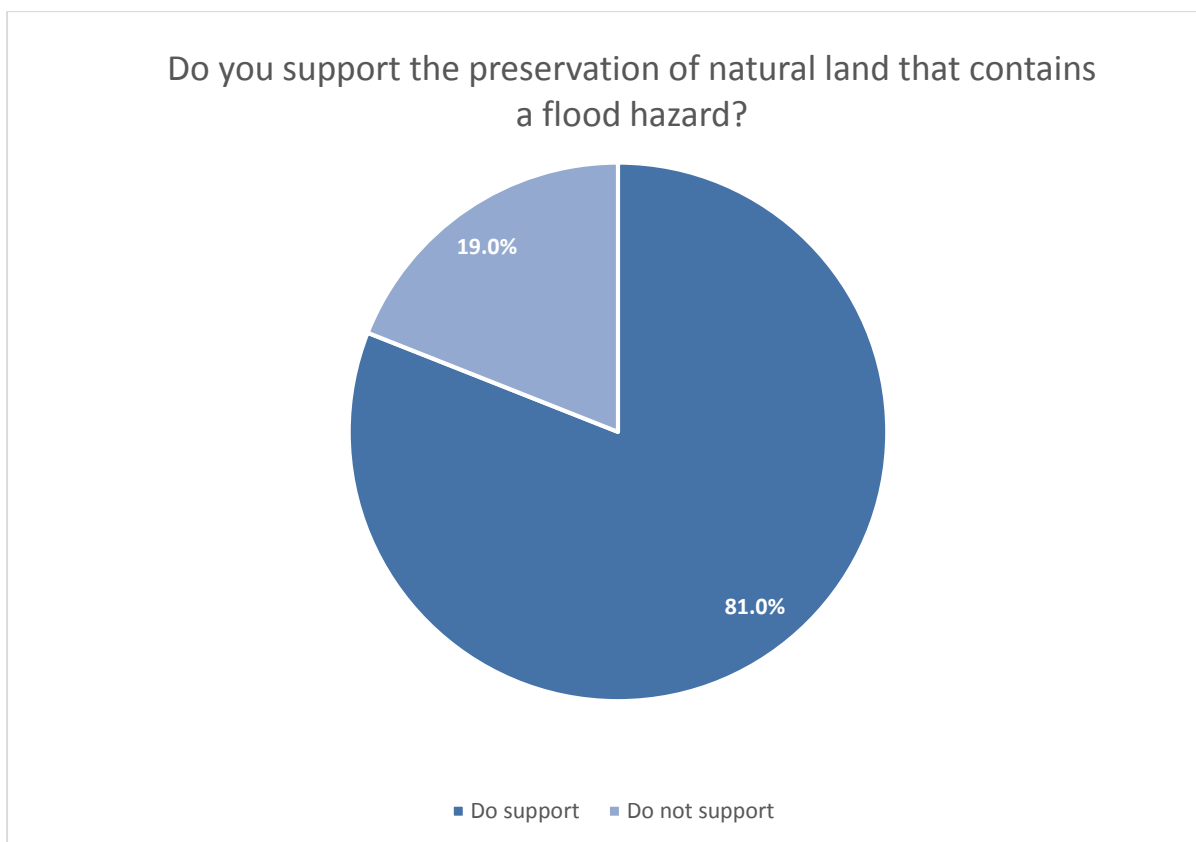
Question 19

Would the disclosure of the flood hazard have influenced your decision to buy or rent a home?		
Answer Options	Response Percent	Response Count
Yes	58.6%	65
No	20.7%	23
Not Sure	20.7%	23
answered question		111
skipped question		25



Question 20

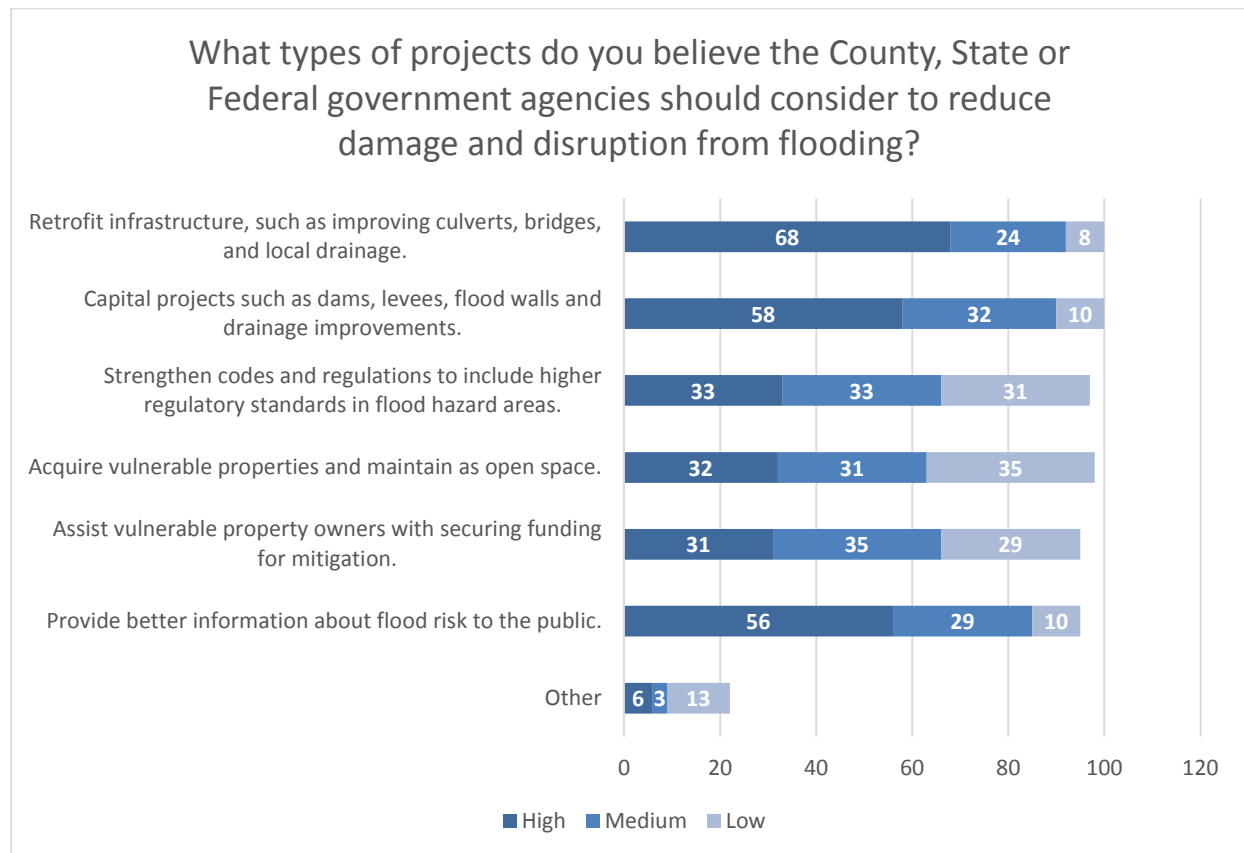
Do you support the preservation of natural land that contains a flood hazard?		
Answer Options	Response Percent	Response Count
Do support	81.0%	81
Do not support	19.0%	19
answered question		100
skipped question		36



Question 21

What types of projects do you believe the County, State or Federal government agencies should consider to reduce damage and disruption from flooding?

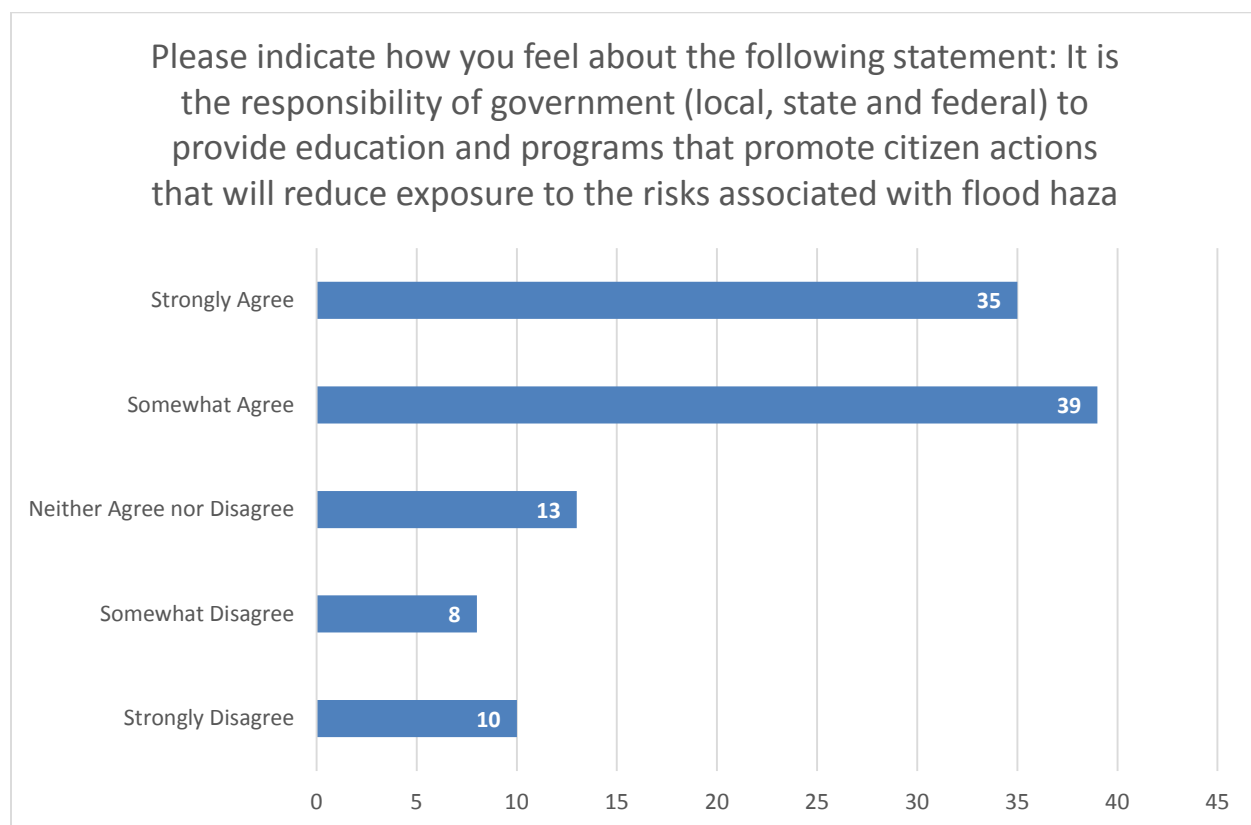
Answer Options	High	Medium	Low	Rating Average	Response Count
Retrofit infrastructure, such as improving culverts, bridges, and local drainage.	68	24	8	1.40	100
Capital projects such as dams, levees, flood walls and drainage improvements.	58	32	10	1.52	100
Strengthen codes and regulations to include higher regulatory standards in flood hazard areas.	33	33	31	1.98	97
Acquire vulnerable properties and maintain as open space.	32	31	35	2.03	98
Assist vulnerable property owners with securing funding for mitigation.	31	35	29	1.98	95
Provide better information about flood risk to the public.	56	29	10	1.52	95
Other (please specify)	6	3	13	2.32	22
					4
answered question					103
skipped question					33



Question 22

Please indicate how you feel about the following statement: It is the responsibility of government (local, state and federal) to provide education and programs that promote citizen actions that will reduce exposure to the risks associated with flood hazards.

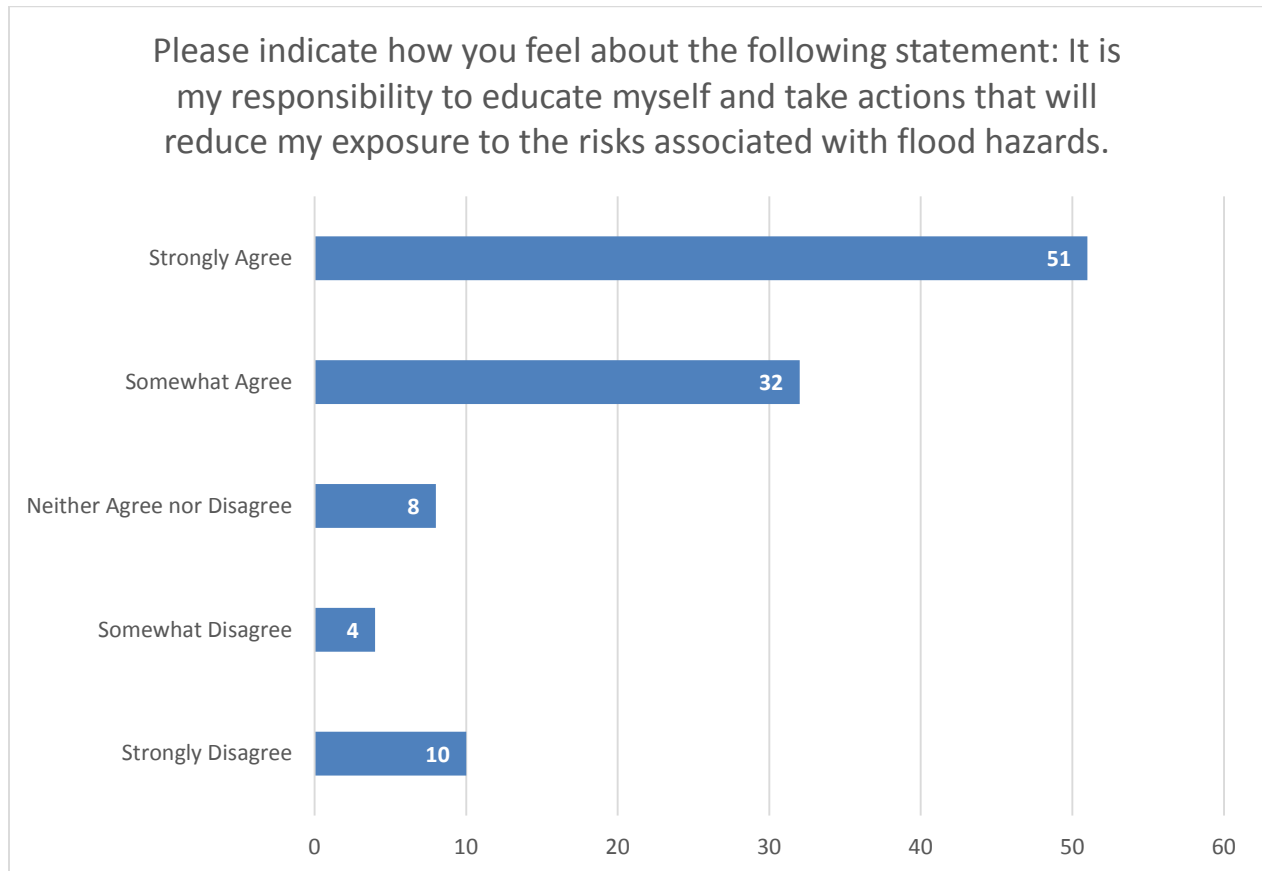
Answer Options	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Rating Average	Response Count
Choose one:	10	8	13	39	35	3.77	105
answered question							105
skipped question							31



Question 23

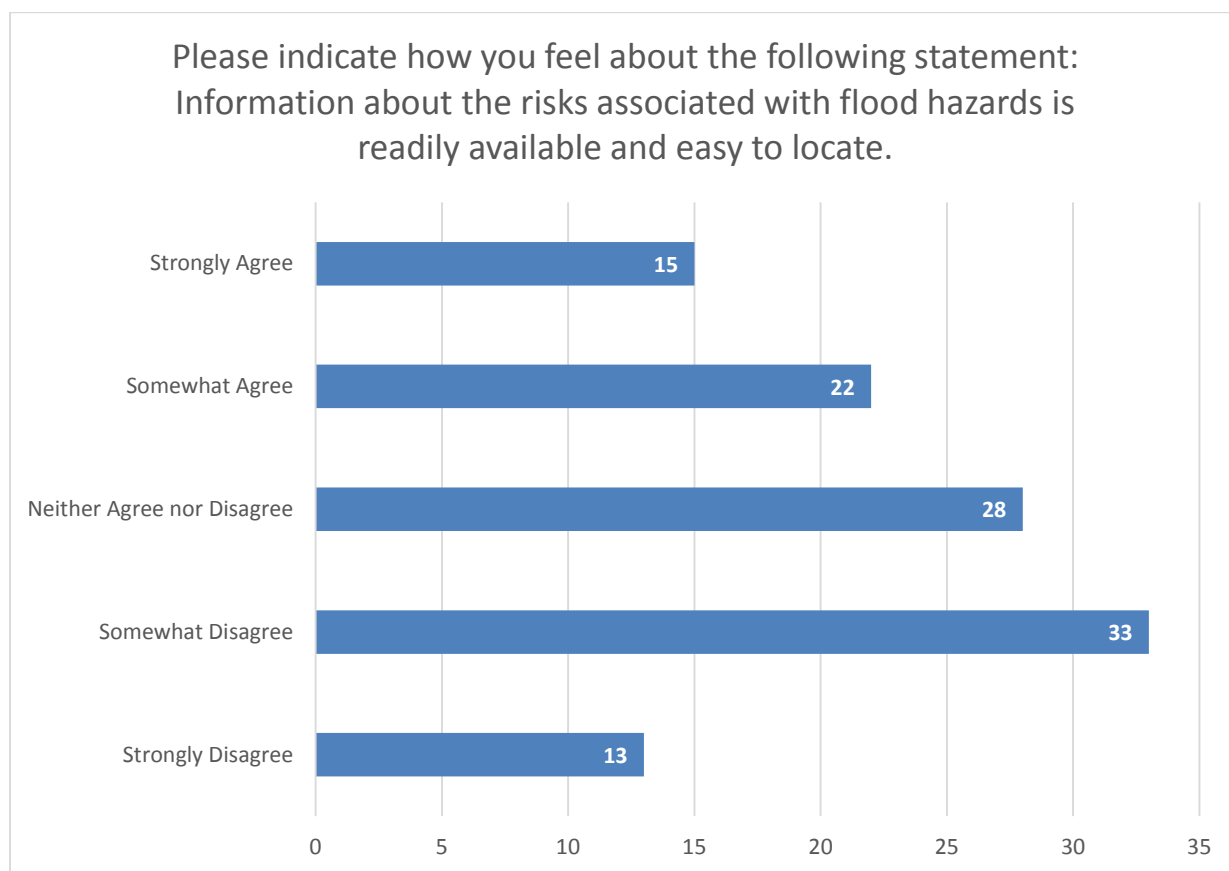
Please indicate how you feel about the following statement: It is my responsibility to educate myself and take actions that will reduce my exposure to the risks associated with flood hazards.

Answer Options	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Rating Average	Response Count
Choose one:	10	4	8	32	51	4.05	105
answered question							105
skipped question							31



Question 24

Please indicate how you feel about the following statement: Information about the risks associated with flood hazards is readily available and easy to locate.							
Answer Options	Strongly Disagree	Somewhat Disagree	Neither Agree nor Disagree	Somewhat Agree	Strongly Agree	Rating Average	Response Count
Choose one:	13	33	28	22	15	2.94	111
answered question							111
skipped question							25

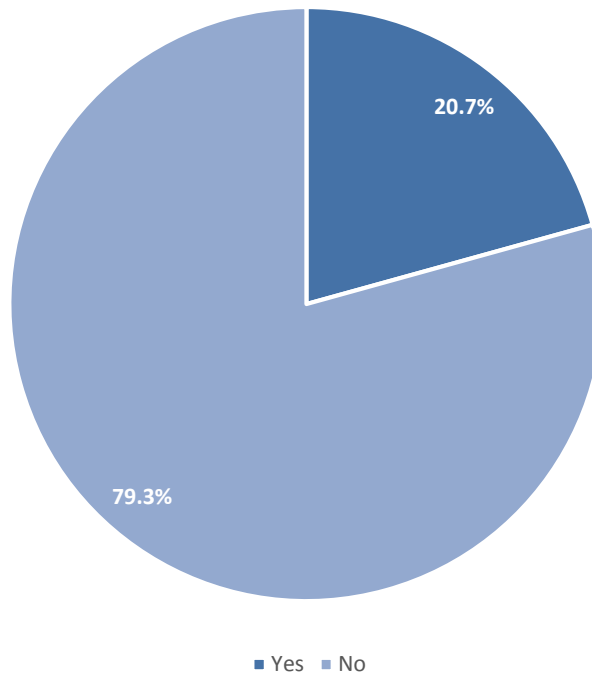


Question 25

Are you aware of the current floodplain management plan's programs and policies to reduce flooding hazards?

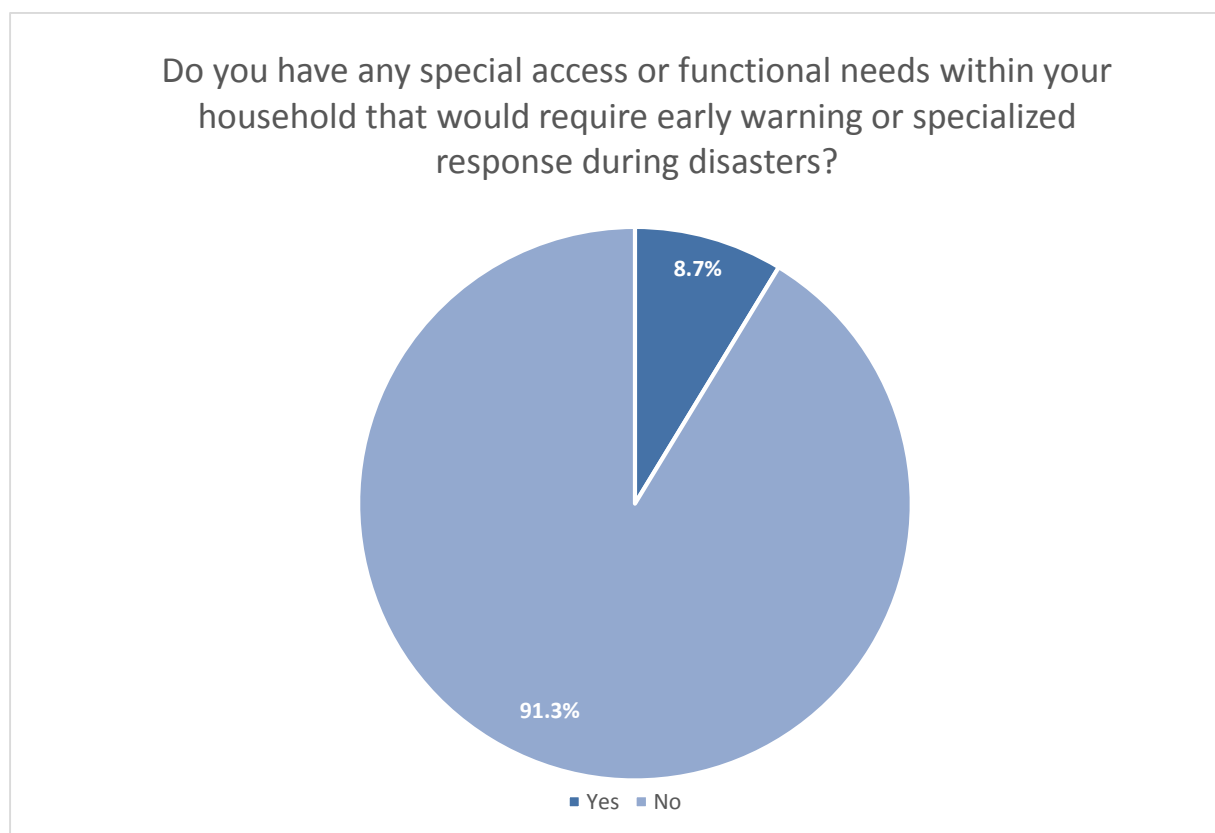
Answer Options	Response Percent	Response Count
Yes	20.7%	23
No	79.3%	88
Please describe programs and policies of which you are aware		8
answered question		111
skipped question		25

Are you aware of the current Floodplain Management Plan's programs and policies to reduce flooding hazards?



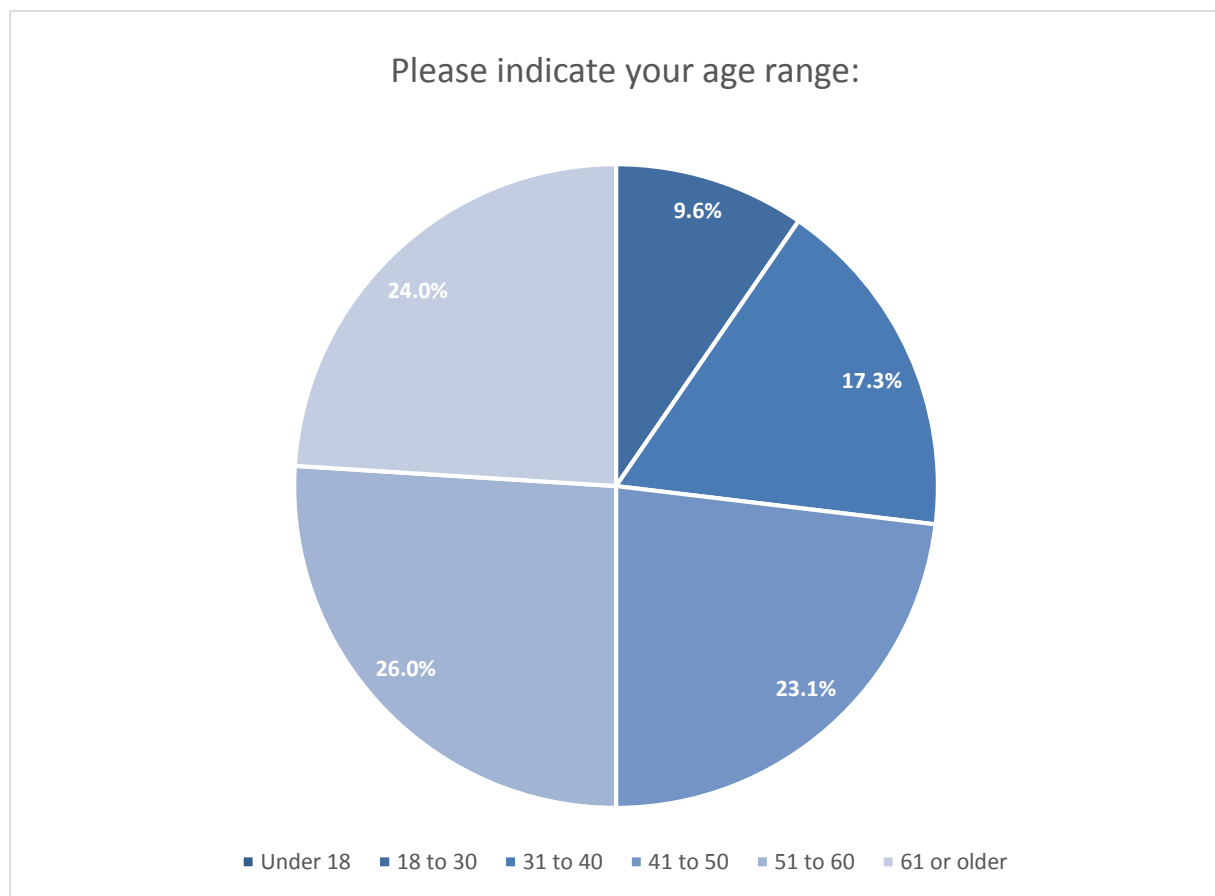
Question 26

Do you have any special access or functional needs within your household that would require early warning or specialized response during disasters?		
Answer Options	Response Percent	Response Count
Yes	8.7%	9
No	91.3%	95
answered question		104
skipped question		32



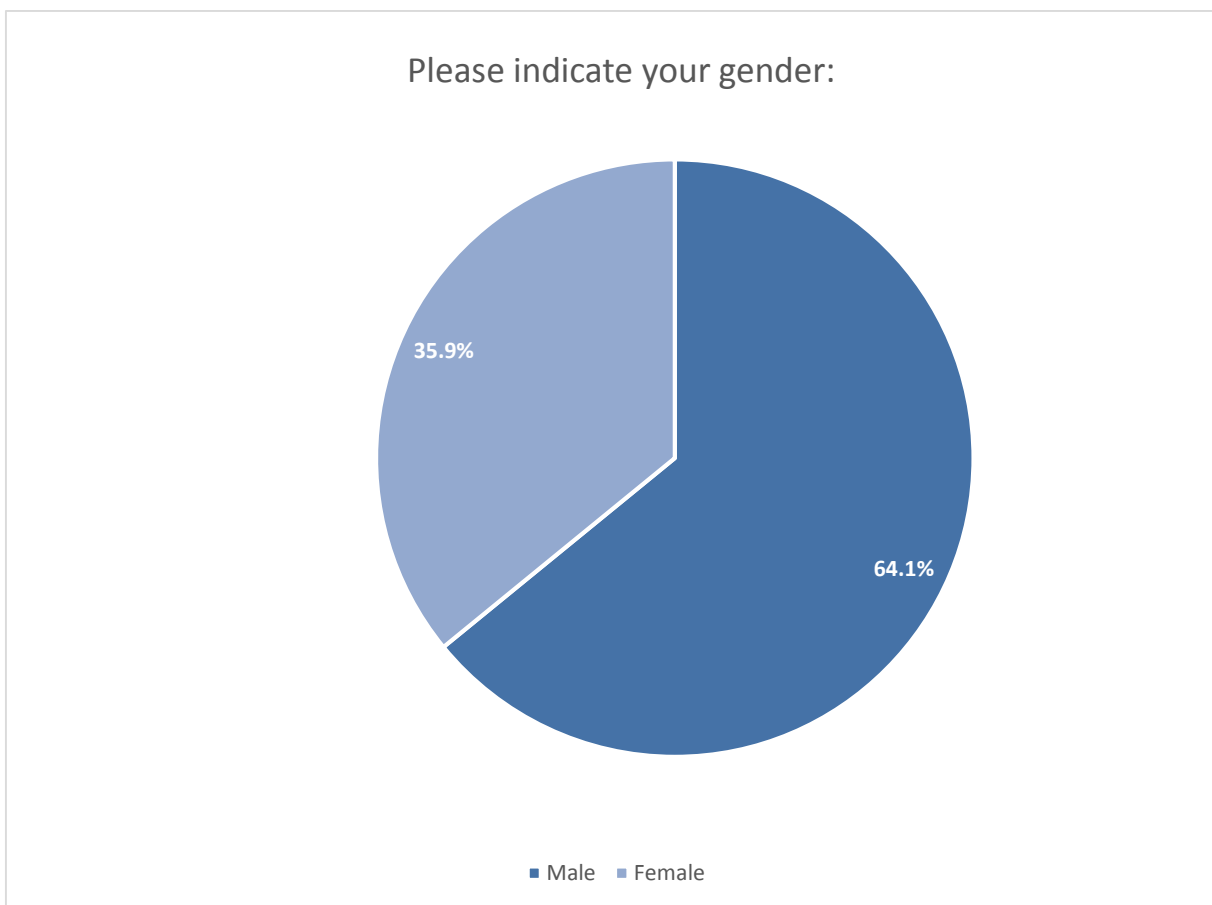
Question 27

Please indicate your age range:		
Answer Options	Response Percent	Response Count
Under 18	0.0%	0
18 to 30	9.6%	10
31 to 40	17.3%	18
41 to 50	23.1%	24
51 to 60	26.0%	27
61 or older	24.0%	25
answered question		104
skipped question		32



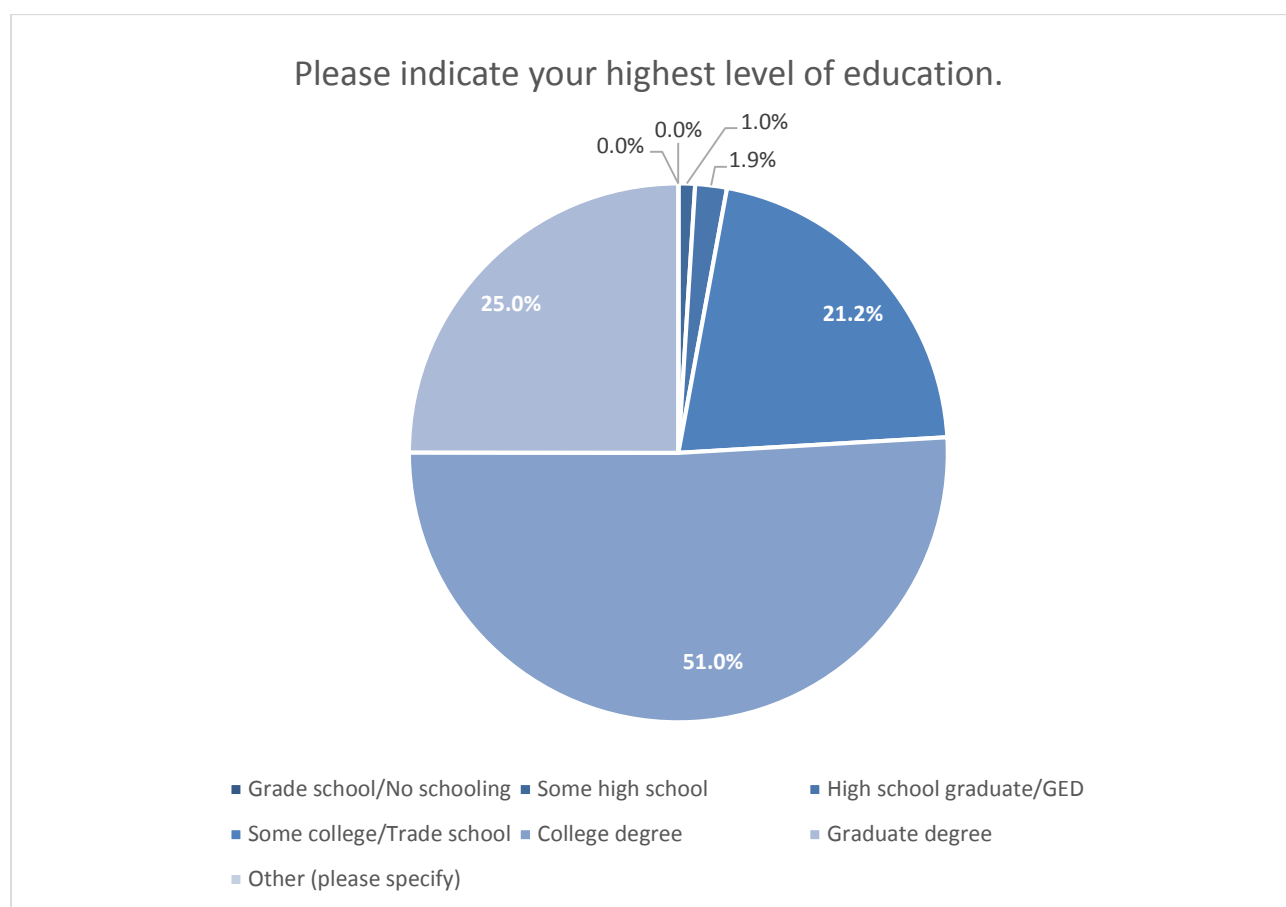
Question 28

Please indicate your gender:		
Answer Options	Response Percent	Response Count
Male	64.1%	66
Female	35.9%	37
answered question		103
skipped question		33



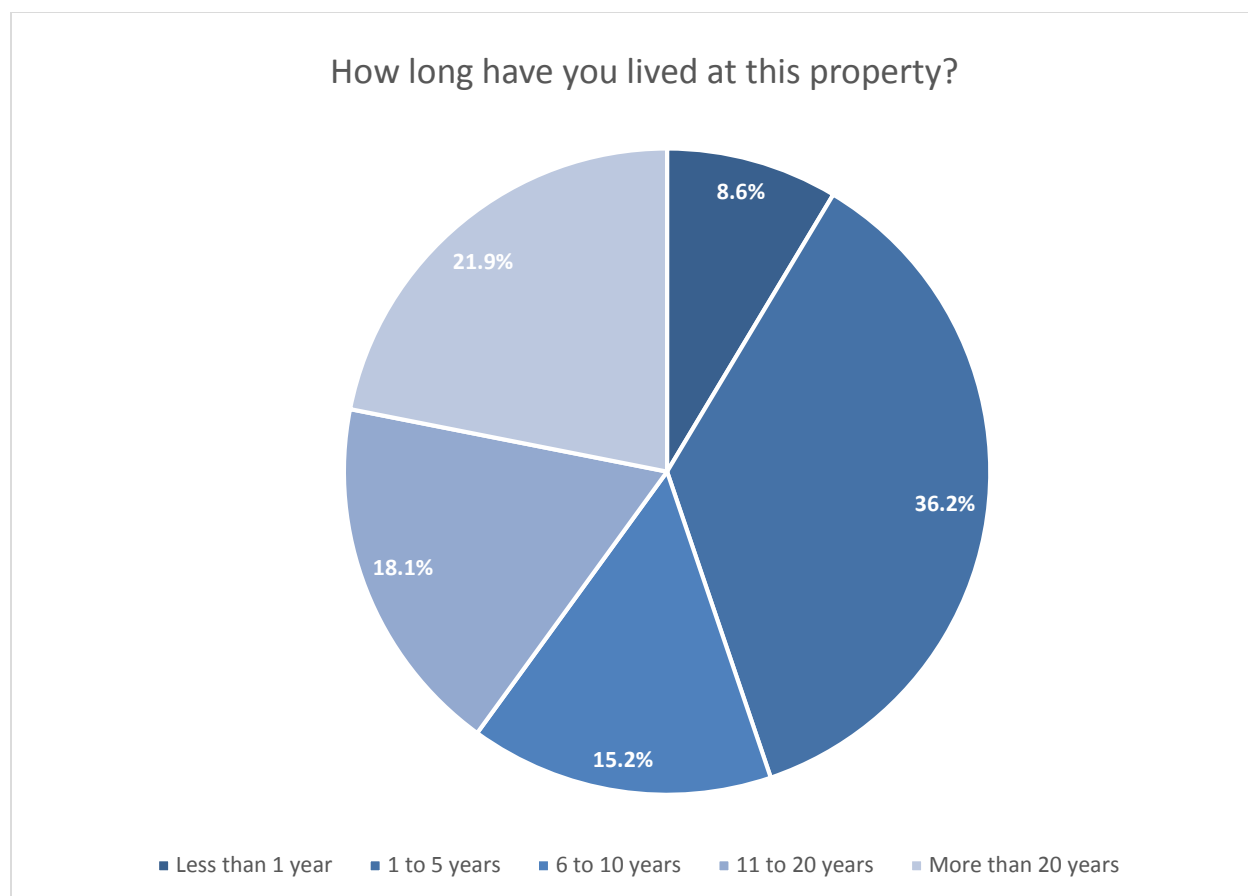
Question 29

Please indicate your highest level of education.		
Answer Options	Response Percent	Response Count
Grade school/No schooling	0.0%	0
Some high school	1.0%	1
High school graduate/GED	1.9%	2
Some college/Trade school	21.2%	22
College degree	51.0%	53
Graduate degree	25.0%	26
Other (please specify)	0.0%	0
answered question		104
skipped question		32



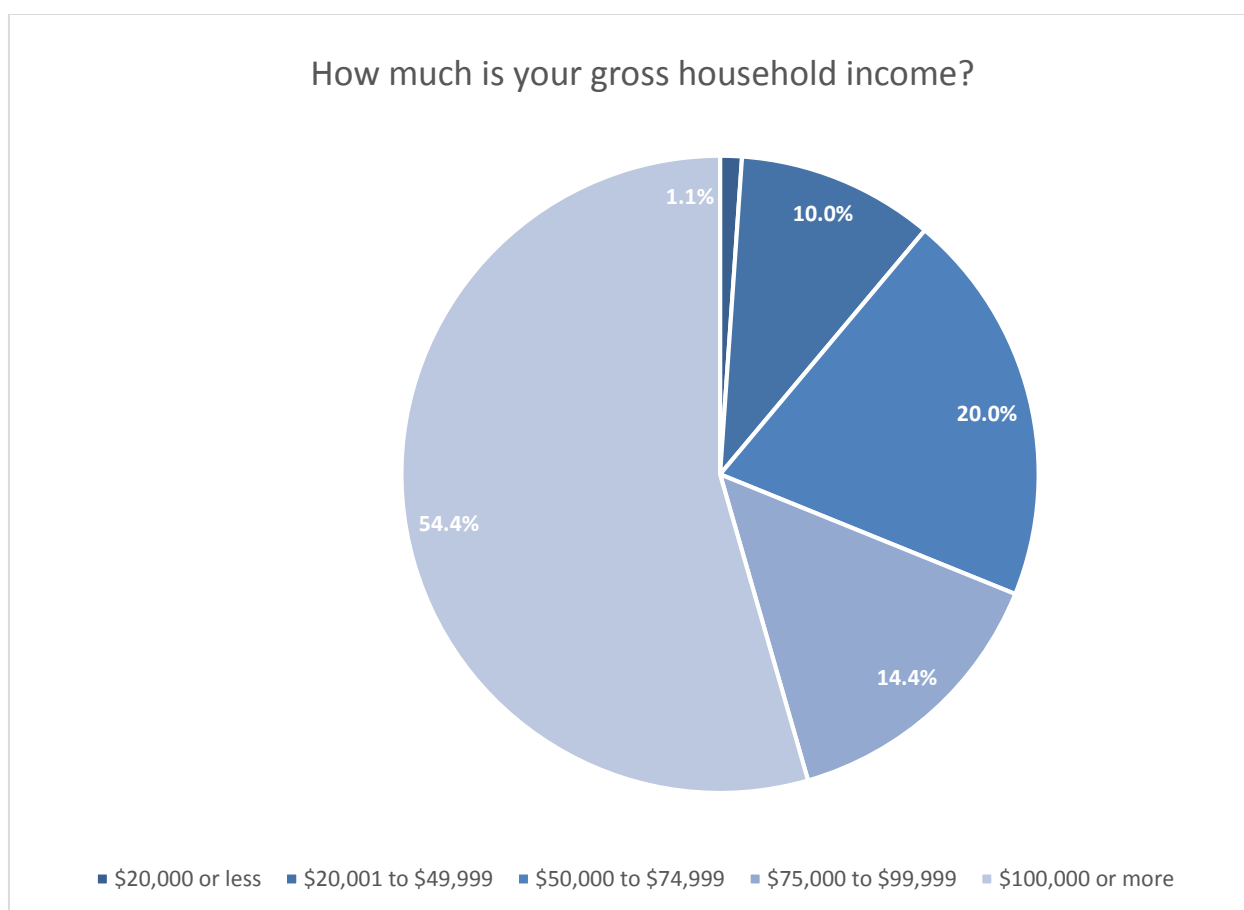
Question 30

How long have you lived at this property?		
Answer Options	Response Percent	Response Count
Less than 1 year	8.6%	9
1 to 5 years	36.2%	38
6 to 10 years	15.2%	16
11 to 20 years	18.1%	19
More than 20 years	21.9%	23
answered question		105
skipped question		31



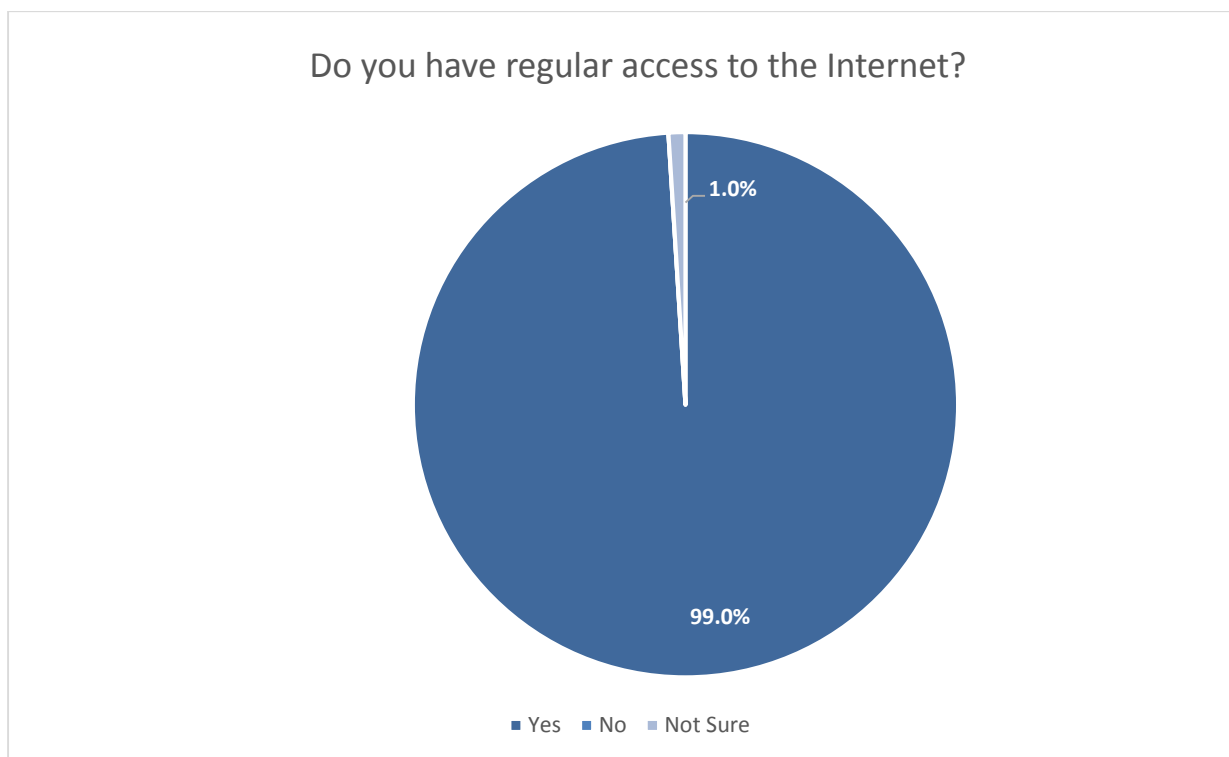
Question 31

How much is your gross household income?		
Answer Options	Response Percent	Response Count
\$20,000 or less	1.1%	1
\$20,001 to \$49,999	10.0%	9
\$50,000 to \$74,999	20.0%	18
\$75,000 to \$99,999	14.4%	13
\$100,000 or more	54.4%	49
answered question		90
skipped question		46



Question 32

Do you have regular access to the Internet?		
Answer Options	Response Percent	Response Count
Yes	99.0%	103
No	0.0%	0
Not Sure	1.0%	1
answered question		104
skipped question		32



Question 33

Comments	
Answer Options	Response Count
	17
answered question	17
skipped question	119